GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: January 26, 2005, 12:54:26 ; Search time 191 Seconds
(without alignments)
777.208 Million cell updates/sec

Title: US-10-019-337E-9
Perfect score: 1413
Sequence: 1 MLSGAYLRVLNERPGQAVLW.....SVLQDQWNPYQNAGQAKVEA 258

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1825181 seqs, 575374646 residues

Total number of hits satisfying chosen parameters: 1825181

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : UniProt_02:*
1: uniprot_sprot:*
2: uniprot_trembl:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	1386	98.1	273	1	GFR4_RAT	Q9epi2 rattus norv
2	1075.5	76.1	260	1	GFR4_MOUSE	Q9jjt2 mus musculu
3	767.5	54.3	299	1	GFR4_HUMAN	Q9gzz7 homo sapien
4	585.5	41.4	431	1	GFR4_CHICK	O93512 gallus gall
5	476.5	33.7	481	2	Q98TT8	Q98tt8 brachydanio
6	476.5	33.7	481	2	AAK11261	Aak11261 brachydan
7	471	33.3	330	2	Q9Z2A2	Q9z2a2 mus musculu
8	469	33.2	358	2	Q9Z2A3	Q9z2a3 mus musculu
9	469	33.2	444	2	Q792X9	Q792x9 rattus norv
10	469	33.2	464	2	O35977	O35977 rattus norv
11	465	32.9	463	1	GFR2_MOUSE	O08842 mus musculu
12	465	32.9	463	2	Q920Y3	Q920y3 mus musculu
13	465	32.9	465	1	GFR1_HUMAN	P56159 homo sapien
14	464	32.8	331	2	Q7Z5C2	Q7z5c2 homo sapien
15	464	32.8	463	2	O35252	O35252 mus musculu
16	464	32.8	468	1	GFR1_MOUSE	P97785 mus musculu
17	464	32.8	468	2	O35246	O35246 mus musculu
18	463	32.8	469	1	GFR1_CHICK	O13156 gallus gall
19	462	32.7	463	2	O35748	O35748 rattus norv
20	462	32.7	464	1	GFR2_HUMAN	O00451 homo sapien
21	462	32.7	464	2	AAH41688	Aah41688 homo sapi
22	462	32.7	468	1	GFR1_RAT	Q62997 rattus norv
23	460.5	32.6	465	1	GFR2_CHICK	O13157 gallus gall
24	459	32.5	472	2	Q98TT9	Q98tt9 brachydanio
25	459	32.5	472	2	AAK11260	Aak11260 brachydan
26	434.5	30.8	495	2	Q6T5C3	Q6t5c3 brachydanio
27	434.5	30.8	495	2	AAR99464	Aar99464 brachydan
28	366.5	25.9	397	2	AAH66202	Aah66202 mus muscu
29	364.5	25.8	385	2	Q9R2D0	Q9r2d0 mus musculu
30	364.5	25.8	397	1	GFR3_MOUSE	O35118 mus musculu
31	363	25.7	222	2	Q9QZG2	Q9qzg2 rattus norv
32	361	25.5	369	2	AAQ89396	Aaq89396 homo sapi
33	361	25.5	400	1	GFR3_HUMAN	O60609 homo sapien
34	361	25.5	400	2	AAQ89356	Aaq89356 homo sapi
35	253.5	17.9	225	2	Q9QWK2	Q9qwk2 mus musculu
36	209.5	14.8	109	2	Q8JG58	Q8jg58 ambystoma m
37	184.5	13.1	394	2	Q6UXV0	Q6uxv0 homo sapien
38	184.5	13.1	394	2	AAQ88565	Aaq88565 homo sapi
39	172.5	12.2	1219	2	Q95XG5	Q95xg5 caenorhabdi
40	167	11.8	393	2	Q6SJE0	Q6sje0 mus musculu
41	167	11.8	393	2	AAS13632	Aas13632 mus muscu
42	153.5	10.9	502	2	Q7QDE4	Q7qde4 anopheles g
43	131.5	9.3	744	2	Q8NHD2	Q8nhd2 homo sapien
44	130.5	9.2	3718	1	LMA5_MOUSE	Q61001 mus musculu
45	130.5	9.2	3775	2	Q7PMF9	Q7pmf9 anopheles g

ALIGNMENTS

```
RESULT 1
GFR4_RAT
ID   GFR4_RAT       STANDARD;      PRT;   273 AA.
AC   Q9EPI2; Q9EPI3;
DT   10-OCT-2003 (Rel. 42, Created)
DT   10-OCT-2003 (Rel. 42, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 4 precursor (GFR-alpha 4) (GFRalpha4)
DE   (Persephin receptor).
GN   Name=Gfra4;
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORMS A AND B), AND VARIANT ARG-257.
RC   TISSUE=Brain, Heart, and Kidney;
RX   MEDLINE=20564314; PubMed=10958791; DOI=10.1074/jbc.M003867200;
RA   Masure S., Cik M., Hoefnagel E., Nosrat C.A., Van der Linden I.,
RA   Scott R., Van Gompel P., Lesage A.S.J., Verhasselt P., Ibanez C.F.,
RA   Gordon R.D.;
RT   "Mammalian GFRalpha-4, a divergent member of the GFRalpha family of
RT   coreceptors for Glial cell line-derived neurotrophic factor family
RT   ligands, is a receptor for the neurotrophic factor persephin.";
RL   J. Biol. Chem. 275:39427-39434(2000).
CC   -!- FUNCTION: Receptor for persephin. Mediates the GDNF-induced
CC       autophosphorylation and activation of the RET receptor. May be
CC       important in C-cell development and, in the postnatal development
CC       of the adrenal medulla.
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor
CC       (isoform A). Secreted (isoform B) (Potential).
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=2;
CC         Comment=Additional isoforms seem to exist;
CC       Name=A;
CC         IsoId=Q9EPI2-1; Sequence=Displayed;
CC       Name=B;
CC         IsoId=Q9EPI2-2; Sequence=VSP_007230;
CC   -!- TISSUE SPECIFICITY: Weakly expressed in heart, brain and testis.
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AJ294475; CAC16420.1; -.
DR   EMBL; AJ294476; CAC16421.1; -.
DR   RGD; 620503; Gfra4.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
```

```
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Alternative splicing; Glycoprotein; GPI-anchor; Lipoprotein; Membrane;
KW   Polymorphism; Receptor; Signal.
FT   SIGNAL        1      ?        Potential.
FT   CHAIN         ?    250        GDNF family receptor alpha 4.
FT   PROPEP      251    273        Removed in mature form (Potential).
FT   CARBOHYD    192    192        N-linked (GlcNAc. . .) (Potential).
FT   LIPID       250    250        GPI-anchor amidated asparagine
FT                                 (Potential).
FT   VARSPLIC    253    273        CCFLWVSSMSILTALALQALL -> QAKVEA (in
FT                                 isoform B).
FT                                 /FTId=VSP_007230.
FT   VARIANT     257    257        W -> R (in 50% of the molecules).
SQ   SEQUENCE   273 AA;  29682 MW;  E0BB76ABE2AC6B04 CRC64;

  Query Match             98.1%;  Score 1386;  DB 1;  Length 273;
  Best Local Similarity   100.0%;  Pred. No. 1.2e-109;
  Matches  252;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60

Qy         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120

Qy        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180

Qy        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240

Qy        241 LQDQWNPYQNAG 252
              ||||||||||||
Db        241 LQDQWNPYQNAG 252


RESULT 2
GFR4_MOUSE
ID   GFR4_MOUSE     STANDARD;      PRT;   260 AA.
AC   Q9JJT2; Q9JJT3; Q9JJT4; Q9JJT6; Q9JJT7; Q9JJT8;
DT   10-OCT-2003 (Rel. 42, Created)
DT   10-OCT-2003 (Rel. 42, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 4 precursor (GFR-alpha 4) (GFRalpha4)
DE   (Persephin receptor).
GN   Name=Gfra4;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORMS A1; A2; A3; B1; B2 AND B3).
RC   TISSUE=Thyroid;
RX   MEDLINE=20319126; PubMed=10860579; DOI=10.1006/mcne.2000.0845;
RA   Lindahl M., Timmusk T., Rossi J., Saarma M., Airaksinen M.S.;
RT   "Expression and alternative splicing of mouse Gfra4 suggest roles in
RT   endocrine cell development.";
RL   Mol. Cell. Neurosci. 15:522-533(2000).
CC   -!- FUNCTION: Receptor for persephin. Mediates the GDNF-induced
CC       autophosphorylation and activation of the RET receptor. May be
CC       important in C-cell development and, in the postnatal development
CC       of the adrenal medulla.
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor
CC       (isoforms a1 and b1). Secreted (isoforms a3 and b3) (Potential).
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=6;
CC         Comment=Additional isoforms seem to exist. Tissue-specific and,
CC         developmentally regulated splicing;
CC       Name=a1;
CC         IsoId=Q9JJT2-1; Sequence=Displayed;
CC       Name=a2;
CC         IsoId=Q9JJT2-2; Sequence=VSP_007227;
CC       Name=a3;
CC         IsoId=Q9JJT2-3; Sequence=VSP_007228, VSP_007229;
CC       Name=b1;
CC         IsoId=Q9JJT2-4; Sequence=VSP_007226;
CC         Note=Alternative N-terminal. Probably non-functional;
CC       Name=b2;
CC         IsoId=Q9JJT2-5; Sequence=VSP_007226, VSP_007227;
CC         Note=Alternative N-terminal. Probably non-functional;
CC       Name=b3;
CC         IsoId=Q9JJT2-6; Sequence=VSP_007226, VSP_007228, VSP_007229;
CC         Note=Alternative N-terminal. Probably non-functional;
CC   -!- TISSUE SPECIFICITY: Expressed in many tissues including adrenal
CC       medulla, brain neurones, with highest levels in the cerebral
CC       cortex and hippocampus. Moderate levels found in the gut circular
CC       muscle and myenteric ganglia as well as in other peripheral
CC       ganglia, including the sensory dorsal root and trigeminal as well
CC       as superior cervical and sympathetic chain ganglia. Isoform a1,
CC       isoform a2, isoform b1 and isoform b2 are exclusively found in the
CC       thyroid, parthyroid and pituitary glands.
CC   -!- DEVELOPMENTAL STAGE: Expressed in several tissues at different
CC       embyronic and postnatal stages such as the condensing mesenchyme
CC       of developing bones and developing nervous system. Expressed in
CC       the developing pituitary gland from E16 and in developing thyroid
CC       C-cells from E14. In the ventral spinal cord, levels decline
CC       before birth. In the parathyroid, levels first detected in 3-to 6-
CC       week-old mice with high expression. In the adrenal medulla,
CC       expressed only in newborn, postnatal (P08) and adult mice. Isoform
CC       a1 and isoform b1 are prefentially expressed in 3-week-old
CC       thyroid, isoform a2 and isoform b2 in newborn and 6-week-old
CC       thyroid glands as well as in postnatal adrenal and pituitary
CC       glands.
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AJ276870; CAB89690.1; -.
DR   EMBL; AJ276871; CAB89691.1; -.
DR   EMBL; AJ276872; CAB89692.1; -.
DR   EMBL; AJ276514; CAB89687.1; -.
DR   EMBL; AJ276515; CAB89688.1; -.
DR   EMBL; AJ276516; CAB89689.1; -.
DR   MGD; MGI:1341873; Gfra4.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Alternative splicing; Glycoprotein; GPI-anchor; Lipoprotein; Membrane;
KW   Receptor; Signal.
FT   SIGNAL        1     23        Potential.
FT   CHAIN        24    237        GDNF family receptor alpha 4.
FT   PROPEP      238    260        Removed in mature form (Potential).
FT   CARBOHYD    184    184        N-linked (GlcNAc. . .) (Potential).
FT   LIPID       237    237        GPI-anchor amidated threonine
FT                                 (Potential).
FT   VARSPLIC      1     17        MAHCMESALLLLLLGS -> MLRRAHLMDERPGQAIFLGL
FT                                 GSQRGS (in isoform b1, isoform b2 and
FT                                 isoform b3).
FT                                 /FTId=VSP_007226.
FT   VARSPLIC    245    260        VSWLYALTALALQALL -> ARHEWPEKSWRQKQSLFCPNA
FT                                 QGVLAVCTHCPGSPGPALIRNMNRGRHS (in isoform
FT                                 a2 and isoform b2).
FT                                 /FTId=VSP_007227.
FT   VARSPLIC    138    190        PRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVT
FT                                 PNYLDNVSARVA -> CVRAGRAGPLTRVRARAGPVSLPSR
FT                                 PHALPRPAPATAARRRGARVVCASTQAS (in isoform
```

```
FT                              a3 and isoform b3).
FT                              /FTId=VSP_007228.
FT   VARSPLIC    191    260     Missing (In isoform a3 and isoform b3).
FT                              /FTId=VSP_007229.
SQ   SEQUENCE   260 AA;  27990 MW;  2679BBC789E38075 CRC64;

  Query Match             76.1%;  Score 1075.5;  DB 1;  Length 260;
  Best Local Similarity   89.6%;  Pred. No. 2.6e-83;
  Matches  198;  Conservative    7;  Mismatches   13;  Indels    3;  Gaps    1;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              ||||  |:|||||:||||||||||:||||||||||:|||||    |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:||||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 236


RESULT 3
GFR4_HUMAN
ID   GFR4_HUMAN     STANDARD;      PRT;   299 AA.
AC   Q9GZZ7; Q9H191; Q9H192;
DT   10-OCT-2003 (Rel. 42, Created)
DT   10-OCT-2003 (Rel. 42, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 4 precursor (GFR-alpha 4) (GFRalpha4)
DE   (Persephin receptor).
GN   Name=GFRA4;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORMS GFRALPHA4A; GFRALPHA4B AND GFRALPHA4C),
RP   AND GPI-ANCHOR.
RC   TISSUE=Thyroid;
RX   MEDLINE=21153758; PubMed=11116144; DOI=10.1074/jbc.M008279200;
RA   Lindahl M., Poteryaev D., Yu L., Arumae U., Timmusk T., Bongarzone I.,
RA   Aiello A., Pierotti M.A., Airaksinen M.S., Saarma M.;
RT   "Human glial cell line-derived neurotrophic factor receptor alpha4 is
RT   the receptor for persephin and is predomonantly expressed in normal
RT   and malignant thyroid medullary cells.";
RL   J. Biol. Chem. 276:9344-9351(2001).
RN   [2]
RP   SEQUENCE FROM N.A. (ISOFORM GFRALPHA4A).
RA   Zhou B., Levinson B., Gitschier J.;
RL   Submitted (APR-2000) to the EMBL/GenBank/DDBJ databases.
RN   [3]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21638749; PubMed=11780052; DOI=10.1038/414865a;
RA   Deloukas P., Matthews L.H., Ashurst J.L., Burton J., Gilbert J.G.R.,
RA   Jones M., Stavrides G., Almeida J.P., Babbage A.K., Bagguley C.L.,
RA   Bailey J., Barlow K.F., Bates K.N., Beard L.M., Beare D.M.,
RA   Beasley O.P., Bird C.P., Blakey S.E., Bridgeman A.M., Brown A.J.,
RA   Buck D., Burrill W.D., Butler A.P., Carder C., Carter N.P.,
RA   Chapman J.C., Clamp M., Clark G., Clark L.N., Clark S.Y., Clee C.M.,
RA   Clegg S., Cobley V.E., Collier R.E., Connor R.E., Corby N.R.,
RA   Coulson A., Coville G.J., Deadman R., Dhami P.D., Dunn M.,
RA   Ellington A.G., Frankland J.A., Fraser A., French L., Garner P.,
RA   Grafham D.V., Griffiths C., Griffiths M.N.D., Gwilliam R., Hall R.E.,
RA   Hammond S., Harley J.L., Heath P.D., Ho S., Holden J.L., Howden P.J.,
RA   Huckle E., Hunt A.R., Hunt S.E., Jekosch K., Johnson C.M., Johnson D.,
RA   Kay M.P., Kimberley A.M., King A., Knights A., Laird G.K., Lawlor S.,
RA   Lehvaeslaiho M.H., Leversha M.A., Lloyd C., Lloyd D.M., Lovell J.D.,
RA   Marsh V.L., Martin S.L., McConnachie L.J., McLay K., McMurray A.A.,
RA   Milne S.A., Mistry D., Moore M.J.F., Mullikin J.C., Nickerson T.,
RA   Oliver K., Parker A., Patel R., Pearce T.A.V., Peck A.I.,
RA   Phillimore B.J.C.T., Prathalingam S.R., Plumb R.W., Ramsay H.,
RA   Rice C.M., Ross M.T., Scott C.E., Sehra H.K., Shownkeen R., Sims S.,
RA   Skuce C.D., Smith M.L., Soderlund C., Steward C.A., Sulston J.E.,
RA   Swann R.M., Sycamore N., Taylor R., Tee L., Thomas D.W., Thorpe A.,
RA   Tracey A., Tromans A.C., Vaudin M., Wall M., Wallis J.M.,
RA   Whitehead S.L., Whittaker P., Willey D.L., Williams L., Williams S.A.,
RA   Wilming L., Wray P.W., Hubbard T., Durbin R.M., Bentley D.R., Beck S.,
RA   Rogers J.;
RT   "The DNA sequence and comparative analysis of human chromosome 20.";
RL   Nature 414:865-871(2001).
CC   -!- FUNCTION: Receptor for persephin. Mediates the GDNF-induced
CC       autophosphorylation and activation of the RET receptor. May be
CC       important in C-cell development and, in the postnatal development
CC       of the adrenal medulla.
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor
CC       (isoforms GFRalpha4a and GFRalpha4b). Secreted (isoform
CC       GFRalpha4c).
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=3;
CC         Comment=Additional isoforms seem to exist;
CC       Name=GFRalpha4b;
CC         IsoId=Q9GZZ7-1; Sequence=Displayed;
CC       Name=GFRalpha4a;
CC         IsoId=Q9GZZ7-2; Sequence=VSP_007223;
CC       Name=GFRalpha4c;
CC         IsoId=Q9GZZ7-3; Sequence=VSP_007224, VSP_007225;
CC   -!- TISSUE SPECIFICITY: Predominantly expressed in the adult thyroid
CC       gland. Low levels also found in fetal adrenal and thyroid glands.
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AJ291673; CAC19690.1; -.
DR   EMBL; AJ291674; CAC19691.1; -.
DR   EMBL; AJ291675; CAC19692.1; -.
DR   EMBL; AF253318; AAG25925.1; -.
DR   EMBL; AL356755; CAC16508.2; -.
DR   Genew; HGNC:13821; GFRA4.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Alternative splicing; Glycoprotein; GPI-anchor; Lipoprotein; Membrane;
KW   Receptor; Signal.
FT   SIGNAL        1     20       Potential.
FT   CHAIN        21    278       GDNF family receptor alpha 4.
FT   PROPEP      279    299       Removed in mature form (Potential).
FT   CARBOHYD    208    208       N-linked (GlcNAc. . .) (Potential).
FT   LIPID       278    278       GPI-anchor amidated glycine (Potential).
FT   VARSPLIC    132    197       CARAAAGPWRGWGRGLSPAHRPPAAQASPPGLSGLVHPSAQ
FT                                RPRRLPAGPGRPLPARLRGPRGVPA -> PRLLAFQVSCTP
FT                                APSAPDGCLLDQGARCLRAYAGLV (in isoform
FT                                GFRalpha4a).
FT                                /FTId=VSP_007223.
FT   VARSPLIC    132    182       CARAAAGPWRGWGRGLSPAHRPPAAQASPPGLSGLVHPSAQ
FT                                RPRRLPAGPG -> PRLLAFQVSCTPAPSAPDGCLLDQGAR
FT                                CLRAYAGLVGSPQAPPSPLTTWTT (in isoform
FT                                GFRalpha4c).
FT                                /FTId=VSP_007224.
FT   VARSPLIC    183    299       Missing (In isoform GFRalpha4c).
FT                                /FTId=VSP_007225.
SQ   SEQUENCE   299 AA;  31669 MW;  8443B8342FF10801 CRC64;

  Query Match             54.3%;  Score 767.5;  DB 1;  Length 299;
  Best Local Similarity   62.5%;  Pred. No. 4.3e-57;
```

```
  Matches  157;  Conservative   10;  Mismatches   51;  Indels   33;  Gaps    3;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              |||||  |||||:||||||||| :||:|||||||||||||||     | | |:||||||||||
Db         16 GSASSVGGNRCVDAAEACTADARCQRLRSEYVAQCLGRA---AQGGCPRARCRRALRRFF 72

Qy         87 ARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCR- 145
              ||||||||||||| | |||||||||||| |:|||||  ||||||:||: ||||| ||
Db         73 ARGPPALTHALLFCPCAGPACAERRRQTFVPSCAFSGPGPAPPSCLEPLNFCERSRVCRC 132

Qy        146 ----------------------------PRLFAFQASCAPAPGSRDGCPEEGGPRCLRAY 177
                                         | |      |   |       |    |  ||
Db        133 ARAAAGPWRGWGRGLSPAHRPPAAQASPPGLSGLVHPSAQRPRRLPAGPGRPLPARLRGP 192

Qy        178 AGL-VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSS 236
               |:  || |||||:|||||||||||| | |||||||:||||| ||||| |||||||||| |
Db        193 RGVPAGTAVTPNYVDNVSARVAPWCDCGASGNRREDCEAFRGLFTRNRCLDGAIQAFASG 252

Qy        237 QPSVLQDQWNP 247
              | || || ||
Db        253 WPPVLLDQLNP 263


RESULT 4
GFR4_CHICK
ID   GFR4_CHICK     STANDARD;      PRT;   431 AA.
AC   O93512;
DT   10-OCT-2003 (Rel. 42, Created)
DT   10-OCT-2003 (Rel. 42, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 4 precursor (GFR-alpha 4) (GFRalpha4).
GN   Name=GFRA4;
OS   Gallus gallus (Chicken).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC   Gallus.
OX   NCBI_TaxID=9031;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Embryonic brain;
RX   MEDLINE=98313402; PubMed=9647690;
RA   Thompson J., Doxakis E., Pinon L.G.P., Strachan P., Buj-Bello A.,
RA   Wyatt S., Buchman V.L., Davies A.M.;
RT   "GFRalpha-4: a new GDNF family receptor.";
RL   Mol. Cell. Neurosci. 11:117-126(1998).
RN   [2]
RP   IDENTIFICATION OF LIGAND.
RX   MEDLINE=98421156; PubMed=9740802;
RA   Enokido Y., de Sauvage F., Hongo J.-A., Ninkina N., Rosenthal A.,
RA   Buchman V.L., Davies A.M.;
RT   "GFRalpha-4 and the tyrosine kinase Ret form a functional receptor
RT   complex for persephin.";
RL   Curr. Biol. 8:1019-1022(1998).
CC   -!- FUNCTION: Receptor for persephin. Mediates the GDNF-induced
CC       autophosphorylation and activation of the RET receptor (By
CC       similarity).
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor (By
CC       similarity).
CC   -!- DEVELOPMENTAL STAGE: Expressed in muscle, kidney, brain, stomach
CC       and intestine at E6. Levels increase in the brain from E6 to E18,
CC       and decrease in muscle and intestine. Levels in the kidney remain
CC       constant. From E10, expression also found in heart, lung, skin and
CC       liver. Levels in the liver increase dramatically at E18. At E18,
CC       highest expression found in kidney and brain. In the embryonic
CC       central nervous system, the spinal cord expressed the highest
CC       levels. Lower levels found in the medulla oblongata, pons,
CC       cerebellum and midbrain, and very low levels in the forebrain.
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF045162; AAC36464.1; -.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Glycoprotein; GPI-anchor; Lipoprotein; Membrane; Receptor; Signal.
FT   SIGNAL        1     19       Potential.
FT   CHAIN        20    403       GDNF family receptor alpha 4.
FT   PROPEP      404    431       Removed in mature form (Potential).
FT   CARBOHYD    180    180       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    296    296       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    308    308       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    339    339       N-linked (GlcNAc. . .) (Potential).
FT   LIPID       403    403       GPI-anchor amidated serine (Potential).
SQ   SEQUENCE   431 AA;  47964 MW;  3EDD945D3CC4E71B CRC64;

  Query Match             41.4%;  Score 585.5;  DB 1;  Length 431;
  Best Local Similarity   47.4%;  Pred. No. 1.8e-41;
  Matches  110;  Conservative   37;  Mismatches   72;  Indels   13;  Gaps    4;

Qy         32 TEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPP 91
              |: |||::||:||  || ||:||:|||: |: |       :| ||:| :|||:|| | ||
Db        140 TQVNRCLDAAKACNVDEMCQRLRTEYVSPCIRRLA--RADTCNRSKCHKALRKFFDRVPP 197

Qy         92 ALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAF 151
              || |||| ||  |||||||||  |||::   :   |:|| ||| |  :  || |   |
Db        198 EYTHELLFCPCEDTACAERRRQTIVPACSYESKE--KPNCLAPLDSCRENYVCRSRYAEF 255

Qy        152 QASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRRE 211
              | :| |:  :  ||  :    || || |::|: :||||:|| :: :|||| | ||||:|
Db        256 QFNCQPSLQTASGCRRDSYAACLLAYTGIIGSPITPNYIDNSTSSIAPWCTCNASGNRQE 315

Qy        212 ECEAFRKLFTRNPCLDGAIQAFD-------SSQPSV--LQDQWNPYQNAGQA 254
              |||:|  ||| | ||  |||||        :: ||:      :   :|| :|
Db        316 ECESFLHLFTDNVCLQNAIQAFGNGTYLNAATAPSISPTTQMYKQERNANRA 367


RESULT 5
Q98TT8
ID   Q98TT8      PRELIMINARY;      PRT;   481 AA.
AC   Q98TT8;
DT   01-JUN-2001 (TrEMBLrel. 17, Created)
DT   01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
DT   01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE   GDNF family receptor alpha-1b.
GN   Name=gfralpha1b;
OS   Brachydanio rerio (Zebrafish) (Danio rerio).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Ostariophysi; Cypriniformes;
OC   Cyprinidae; Danio.
OX   NCBI_TaxID=7955;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21135398; PubMed=11237470;
RA   Shepherd I.T., Beattie C.E., Raible D.W.;
RT   "Functional analysis of zebrafish GDNF.";
RL   Dev. Biol. 231:420-435(2001).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   PubMed=14660438;
RA   Shepherd I.T., Pietsch J., Elworthy S., Kelsh R.N., Raible D.W.;
RT   "Roles for GFR{alpha}1 receptors in zebrafish enteric nervous system
RT   development.";
RL   Development 131:241-249(2004).
DR   EMBL; AY436321; AAK11261.2; -.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
```

```
SQ   SEQUENCE   481 AA;  53639 MW;  478917653049CE23 CRC64;

  Query Match             33.7%;  Score 476.5;  DB 2;  Length 481;
  Best Local Similarity   39.9%;  Pred. No. 3.6e-32;
  Matches   93;  Conservative   39;  Mismatches   86;  Indels   15;  Gaps    4;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              | |: |: | |: ||:||  :: |:: || |:: |  |          | : :| :|||:||
Db        152 GEAAFTKDNNCLNAAKACNLNDTCKKYRSLYISPCTSRVS--TTEVCNKRKCHKALRQFF 209

Qy         87 ARGPPALTHALLFCGC---EGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
                : ||  :: :||| |   :  ||:||||||  |||::   :   |:||      |: :
Db        210 DKVPPKHSYGMLFCSCPSGDHSACSERRRQTIVPACSYEDKE--KPNCLSLQASCKTNYI 267

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              || ||  |  :| |   |  || :|    || ||:||:|||:|||||      |:||| |
Db        268 CRSRLADFLTNCQPEARSISGCLKENYADCLLAYSGLIGTVMTPNYLRAPGISVSPWCDC 327

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSS--------QPSVLQDQWNPY 248
                ||| : ||: | : || | ||  ||||| :          || ::    :||
Db        328 SNSGNGKAECDKFTEFFTNNRCLRNAIQAFGNGTDVGVWQPQPPIMSTPADPY 380


RESULT 6
AAK11261
ID   AAK11261   PRELIMINARY;      PRT;   481 AA.
AC   AAK11261;
DT   02-MAR-2004 (TrEMBLrel. 27, Created)
DT   02-MAR-2004 (TrEMBLrel. 27, Last sequence update)
DT   02-MAR-2004 (TrEMBLrel. 27, Last annotation update)
DE   GDNF family receptor alpha-1b.
GN   GFRALPHA1B.
OS   Brachydanio rerio (Zebrafish) (Danio rerio).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Ostariophysi; Cypriniformes;
OC   Cyprinidae; Danio.
OX   NCBI_TaxID=7955;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21135398; PubMed=11237470;
RA   Shepherd I.T., Beattie C.E., Raible D.W.;
RT   "Functional analysis of zebrafish GDNF.";
RL   Dev. Biol. 231:420-435(2001).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   PubMed=14660438;
RA   Shepherd I.T., Pietsch J., Elworthy S., Kelsh R.N., Raible D.W.;
RT   "Roles for GFR{alpha}1 receptors in zebrafish enteric nervous system
RT   development.";
RL   Development 131:241-249(2004).
DR   EMBL; AY436321; AAK11261.2; -.
KW   Receptor.
SQ   SEQUENCE   481 AA;  53639 MW;  478917653049CE23 CRC64;

  Query Match             33.7%;  Score 476.5;  DB 2;  Length 481;
  Best Local Similarity   39.9%;  Pred. No. 3.6e-32;
  Matches   93;  Conservative   39;  Mismatches   86;  Indels   15;  Gaps    4;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              | |: |: | |: ||:||  :: |:: || |:: |  |          | : :| :|||:||
Db        152 GEAAFTKDNNCLNAAKACNLNDTCKKYRSLYISPCTSRVS--TTEVCNKRKCHKALRQFF 209

Qy         87 ARGPPALTHALLFCGC---EGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
                : ||  :: :||| |   :  ||:||||||  |||::   :   |:||      |: :
Db        210 DKVPPKHSYGMLFCSCPSGDHSACSERRRQTIVPACSYEDKE--KPNCLSLQASCKTNYI 267

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              || ||  |  :| |   |  || :|    || ||:||:|||:|||||      |:||| |
Db        268 CRSRLADFLTNCQPEARSISGCLKENYADCLLAYSGLIGTVMTPNYLRAPGISVSPWCDC 327

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSS--------QPSVLQDQWNPY 248
                ||| : ||: | : || | ||  ||||| :          || ::    :||
Db        328 SNSGNGKAECDKFTEFFTNNRCLRNAIQAFGNGTDVGVWQPQPPIMSTPADPY 380


RESULT 7
Q9Z2A2
ID   Q9Z2A2      PRELIMINARY;      PRT;   330 AA.
AC   Q9Z2A2;
DT   01-MAY-1999 (TrEMBLrel. 10, Created)
DT   01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Glial cell line derived neurotrophic factor family receptor alpha
DE   2c.
GN   Name=Gfra2;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Wong Y.W., Too H.P.;
RT   "Identification of mammalian GFRa-2 splice isoforms.";
RL   Neuroreport 9:0-0(1998).
DR   EMBL; AF079108; AAC82465.1; -.
DR   MGD; MGI:1195462; Gfra2.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003504; GDNF_receptorA2.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01318; GDNFRALPHA2.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
SQ   SEQUENCE   330 AA;  36506 MW;  ADA14BF4C2777594 CRC64;

  Query Match             33.3%;  Score 471;  DB 2;  Length 330;
  Best Local Similarity   42.5%;  Pred. No. 7.3e-32;
  Matches   91;  Conservative   31;  Mismatches   86;  Indels    6;  Gaps    3;

Qy         22 LGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRA 81
              ||        | | | |::||:||  :: |::||| |:: |           | | :| :|
Db         13 LGTGADPVVSAESNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKA 70

Qy         82 LRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERS 141
              ||:|| | |    |: :||| |:  |||||||||  |:|::   :   |:||      |
Db         71 LRQFFDRVPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTD 128

Qy        142 RRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAP 199
                 || ||  | |:|  :  :   || :    || :|||::|  :||||:|:       |:|
Db        129 HLCRSRLADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSP 188

Qy        200 WCGCEASGNRREECEAFRKLFTRNPCLDGAIQAF 233
              || |  |||  |||| | | || ||||  |||||
Db        189 WCNCRGSGNMEEECEKFLKDFTENPCLRNAIQAF 222


RESULT 8
Q9Z2A3
ID   Q9Z2A3      PRELIMINARY;      PRT;   358 AA.
AC   Q9Z2A3;
DT   01-MAY-1999 (TrEMBLrel. 10, Created)
DT   01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Glial cell line derived neurotrophic factor family receptor alpha
DE   2b.
GN   Name=Gfra2;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Wong Y.W., Too H.P.;
RT   "Identification of mammalian GFRa-2 splice isoforms.";
RL   Neuroreport 9:0-0(1998).
DR   EMBL; AF079107; AAC82464.1; -.
```

```
DR   MGD; MGI:1195462; Gfra2.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003504; GDNF_receptorA2.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01318; GDNFRALPHA2.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
SQ   SEQUENCE   358 AA;  39700 MW;  F440CE3B1F629225 CRC64;

  Query Match             33.2%;  Score 469;  DB 2;  Length 358;
  Best Local Similarity   43.4%;  Pred. No. 1.2e-31;
  Matches   89;  Conservative   31;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         31 STEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGP 90
              | | | |::||:||  :: |::||| |:: |          | | :| :|||:|| | |
Db         50 SAESNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDRVP 107

Qy         91 PALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFA 150
              |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        108 SEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRLAD 165

Qy        151 FQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEASGN 208
              | |:|  :  :   || :    || :|||::|  :||||:|:     |:||| |  |||
Db        166 FHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGSGN 225

Qy        209 RREECEAFRKLFTRNPCLDGAIQAF 233
              |||| | | || ||||  |||||
Db        226 MEEECEKFLKDFTENPCLRNAIQAF 250


RESULT 9
Q792X9
ID   Q792X9      PRELIMINARY;      PRT;   444 AA.
AC   Q792X9;
DT   05-JUL-2004 (TrEMBLrel. 27, Created)
DT   05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT   05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE   GDNF receptor-beta (Fragment).
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hippocampus;
RX   MEDLINE=97402208; PubMed=9259272;
RA   Suvanto P., Wartiovaara K., Lindahl M., Arumae U., Moshnyakov M.,
RA   Horelli-Kuitunen N., Airaksinen M.S., Palotie A., Sariola H.,
RA   Saarma M.;
RT   "Cloning, mRNA distribution and chromosomal localisation of the gene
RT   for glial cell line-derived neurotrophic factor receptor beta, a
RT   homologue to GDNFR-alpha.";
RL   Hum. Mol. Genet. 6:1267-1273(1997).
DR   EMBL; AF003825; AAD09310.1; -.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003504; GDNF_receptorA2.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01318; GDNFRALPHA2.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
FT   NON_TER     444     444
SQ   SEQUENCE   444 AA;  49578 MW;  A548644EDB36D5F3 CRC64;

  Query Match             33.2%;  Score 469;  DB 2;  Length 444;
  Best Local Similarity   43.0%;  Pred. No. 1.5e-31;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
              |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:     |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 10
O35977
ID   O35977      PRELIMINARY;      PRT;   464 AA.
AC   O35977;
DT   01-JAN-1998 (TrEMBLrel. 05, Created)
DT   01-JAN-1998 (TrEMBLrel. 05, Last sequence update)
DT   05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE   Glial cell line-derived neurotrophic factor receptor-beta (RET ligand
DE   2).
GN   Name=GDNFR-beta; Synonyms=RETL2;
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=98271460; PubMed=9608533;
RA   Trupp M., Raynoschek C., Belluardo N., Ibanez C.F.;
RT   "Multiple GPI-anchored receptors control GDNF-dependent and
RT   independent activation of the c-Ret receptor tyrosine kinase.";
RL   Mol. Cell. Neurosci. 11:47-63(1998).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain/kidney;
RX   MEDLINE=97322356; PubMed=9177201;
RA   Sanicola M., Hession C.A., Worley D.S., Carmillo P., Ehrenfels C.,
RA   Walus L., Robinson S., Jaworski G., Wei H., Tizard R., Whitty A.,
RA   Pepinsky R.B., Cate R.L.;
RT   "Glial cell line-derived neurotrophic factor-dependent RET activation
RT   can be mediated by two different cell-surface accessory proteins.";
RL   Proc. Natl. Acad. Sci. U.S.A. 94:6238-6243(1997).
DR   EMBL; AF005226; AAB62247.1; -.
DR   EMBL; U97143; AAC53301.1; -.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003504; GDNF_receptorA2.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01318; GDNFRALPHA2.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
SQ   SEQUENCE   464 AA;  51668 MW;  81168301BE50D6CC CRC64;

  Query Match             33.2%;  Score 469;  DB 2;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 1.5e-31;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
              |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:     |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
```

```
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 11
GFR2_MOUSE
ID   GFR2_MOUSE      STANDARD;      PRT;   463 AA.
AC   O08842;
DT   01-NOV-1997 (Rel. 35, Created)
DT   01-NOV-1997 (Rel. 35, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 2 precursor (GFR-alpha 2) (Neurturin
DE   receptor alpha) (NTNR-alpha) (NRTNR-alpha) (TGF-beta related
DE   neurotrophic factor receptor 2) (GDNF receptor beta) (GDNFR-beta).
GN   Name=Gfra2; Synonyms=Gdnfrb, Trnr2;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORMS 1 AND 2).
RX   MEDLINE=97325791; PubMed=9182803;
RA   Baloh R.H., Tansey M.G., Golden J.P., Creedon D.J., Heuckeroth R.O.,
RA   Keck C.L., Zimonjic D.B., Popescu N.C., Johnson E.M. Jr.,
RA   Milbrandt J.;
RT   "TrnR2, a novel receptor that mediates neurturin and GDNF signaling
RT   through Ret.";
RL   Neuron 18:793-802(1997).
CC   -!- FUNCTION: Receptor for neurturin. Mediates the NRTN-induced
CC       autophosphorylation and activation of the RET receptor. Also able
CC       to mediate GDNF signaling through the RET tyrosine kinase
CC       receptor.
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor (By
CC       similarity).
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=2;
CC       Name=1; Synonyms=Long;
CC         IsoId=O08842-1; Sequence=Displayed;
CC       Name=2; Synonyms=Short;
CC         IsoId=O08842-2; Sequence=VSP_001662;
CC   -!- TISSUE SPECIFICITY: Neurons of the superior cervical and dorsal
CC       root ganglia, and adult brain and testis. Low level in the spleen
CC       and in the adrenal gland.
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF002701; AAC53548.1; -.
DR   MGD; MGI:1195462; Gfra2.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Alternative splicing; Glycoprotein; GPI-anchor; Lipoprotein; Membrane;
KW   Receptor; Signal.
FT   SIGNAL       1     21       Potential.
FT   CHAIN       22    443       GDNF family receptor alpha 2.
FT   PROPEP     444    463       Removed in mature form (Potential).
FT   CARBOHYD    52     52       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD   357    357       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD   413    413       N-linked (GlcNAc. . .) (Potential).
FT   LIPID      443    443       GPI-anchor amidated serine (Potential).
FT   VARSPLIC    14    146       Missing (in isoform 2).
FT                               /FTId=VSP_001662.
SQ   SEQUENCE   463 AA;  51598 MW;  4FB495FA58C61F78 CRC64;

  Query Match            32.9%;  Score 465;  DB 1;  Length 463;
  Best Local Similarity  42.9%;  Pred. No. 3.3e-31;
  Matches   88;  Conservative   32;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         31 STEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGP 90
              | : | |::||:|| :: |::||| |:: |           | | :| :|||:|| | |
Db        155 SAKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDRVP 212

Qy         91 PALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFA 150
                |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        213 SEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRLAD 270

Qy        151 FQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEASGN 208
              | |:|  :  :   || :   || :|||::|  :||||:|:      |:||| |  ||| .
Db        271 FHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGSGN 330

Qy        209 RREECEAFRKLFTRNPCLDGAIQAF 233
              |||| | | || ||||  |||||
Db        331 MEEECEKFLKDFTENPCLRNAIQAF 355


RESULT 12
Q920Y3
ID   Q920Y3      PRELIMINARY;      PRT;   463 AA.
AC   Q920Y3;
DT   01-DEC-2001 (TrEMBLrel. 19, Created)
DT   01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Glial cell line derived neurotrophic factor family receptor alpha
DE   2.
GN   Name=Gfra2;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=C57BL;
RX   MEDLINE=22712886; PubMed=12829325;
RA   Too H.P.;
RT   "Real time PCR quantification of GFRalpha-2 alternatively spliced
RT   isoforms in murine brain and peripheral tissues.";
RL   Brain Res. Mol. Brain Res. 114:146-153(2003).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=C57BL;
RA   Wong Y.W., Too H.P.;
RL   Submitted (JUL-2001) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF398416; AAK97483.1; -.
DR   EMBL; AF398411; AAK97483.1; JOINED.
DR   EMBL; AF398412; AAK97483.1; JOINED.
DR   EMBL; AF398414; AAK97483.1; JOINED.
DR   EMBL; AF398415; AAK97483.1; JOINED.
DR   EMBL; AF398413; AAK97483.1; JOINED.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003504; GDNF_receptorA2.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01318; GDNFRALPHA2.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
SQ   SEQUENCE   463 AA;  51582 MW;  42FAA1EF59975E2C CRC64;

  Query Match            32.9%;  Score 465;  DB 2;  Length 463;
  Best Local Similarity  42.9%;  Pred. No. 3.3e-31;
  Matches   88;  Conservative   32;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         31 STEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGP 90
              | : | |::||:|| :: |::||| |:: |           | | :| :|||:|| | |
Db        155 SAKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDRVP 212

Qy         91 PALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFA 150
                |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        213 SEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRLAD 270

Qy        151 FQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEASGN 208
```

```
                    | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |||
Db        271 FHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGSGN 330

Qy        209 RREECEAFRKLFTRNPCLDGAIQAF 233
                |||| | | || ||||  |||||
Db        331 MEEECEKFLKDFTENPCLRNAIQAF 355


RESULT 13
GFR1_HUMAN
ID   GFR1_HUMAN     STANDARD;      PRT;   465 AA.
AC   P56159; O15507; O43912;
DT   01-NOV-1997 (Rel. 35, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   GDNF family receptor alpha 1 precursor (GFR-alpha 1) (GDNF receptor
DE   alpha) (GDNFR-alpha) (TGF-beta related neurotrophic factor receptor 1)
DE   (RET ligand 1).
GN   Name=GFRA1; Synonyms=GDNFRA, TRNR1, RETL1;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RC   TISSUE=Substantia nigra;
RX   MEDLINE=96270513; PubMed=8674117;
RA   Jing S., Wen D., Yu Y., Holst P.L., Luo Y., Fang M., Tamir R.,
RA   Antonio L., Hu Z., Cupples R., Louis J.-C., Hu S., Altrock B.W.,
RA   Fox G.M.;
RT   "GDNF-induced activation of the ret protein tyrosine kinase is
RT   mediated by GDNFR-alpha, a novel receptor for GDNF.";
RL   Cell 85:1113-1124(1996).
RN   [2]
RP   SEQUENCE FROM N.A. (ISOFORM 2).
RC   TISSUE=Kidney;
RX   MEDLINE=97322356; PubMed=9177201;
RA   Sanicola M., Hession C.A., Worley D.S., Carmillo P., Ehrenfels C.,
RA   Walus L., Robinson S., Jaworski G., Wei H., Tizard R., Whitty A.,
RA   Pepinsky R.B., Cate R.L.;
RT   "Glial cell line-derived neurotrophic factor-dependent RET activation
RT   can be mediated by two different cell-surface accessory proteins.";
RL   Proc. Natl. Acad. Sci. U.S.A. 94:6238-6243(1997).
RN   [3]
RP   SEQUENCE FROM N.A. (ISOFORM 1), AND VARIANTS ASN-85 AND ALA-366.
RX   MEDLINE=98207251; PubMed=9545641; DOI=10.1006/geno.1997.5191;
RA   Angrist M., Jing S., Bolk S., Bentley K., Nallasamy S., Halushka M.,
RA   Fox G.M., Chakravarti A.;
RT   "Human GFRA1: cloning, mapping, genomic structure, and evaluation as a
RT   candidate gene for Hirschsprung disease susceptibility.";
RL   Genomics 48:354-362(1998).
RN   [4]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RC   TISSUE=Thyroid carcinoma;
RX   MEDLINE=98260874; PubMed=9600247;
RA   Shefelbine S.E., Khorana S., Schultz P.N., Huang E., Thobe N.,
RA   Hu Z.J., Fox G.M., Jing S., Cote G.J., Gagel R.F.;
RT   "Mutational analysis of the GDNF/RET-GDNFR-alpha signaling complex in
RT   a kindred with vesicoureteral reflux.";
RL   Hum. Genet. 102:474-478(1998).
RN   [5]
RP   SEQUENCE FROM N.A. (ISOFORM 2).
RC   TISSUE=Substantia nigra;
RA   Hishiki T., Kondoh K., Ichimiya S., Nimura Y., Seki N., Ozaki T.,
RA   Sakiyama S., Takahashi H., Ohnuma N., Tanabe M., Fujimura S.,
RA   Nakagawara A.;
RT   "GDNF-induced differentiation and its enhancement by retinoic acid in
RT   primary human neuroblastomas expressing c-Ret and GDNFR-alpha.";
RL   Submitted (OCT-1997) to the EMBL/GenBank/DDBJ databases.
RN   [6]
RP   SEQUENCE FROM N.A. (ISOFORM 2).
RC   TISSUE=Eye;
RX   MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length human
RT   and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN   [7]
RP   SPLICE ISOFORM(S) THAT ARE POTENTIAL NMD TARGET(S).
RX   PubMed=14759258; DOI=10.1186/gb-2004-5-2-r8;
RA   Hillman R.T., Green R.E., Brenner S.E.;
RT   "An unappreciated role for RNA surveillance.";
RL   Genome Biol. 5:RESEARCH008.1-RESEARCH008.16(2004).
RN   [8]
RP   VARIANTS ALA-366 AND ARG-371.
RX   PubMed=14566559; DOI=10.1007/s00439-003-1036-z;
RA   Sasaki A., Kanai M., Kijima K., Akaba K., Hashimoto M., Hasegawa H.,
RA   Otaki S., Koizumi T., Kusuda S., Ogawa Y., Tuchiya K., Yamamoto W.,
RA   Nakamura T., Hayasaka K.;
RT   "Molecular analysis of congenital central hypoventilation syndrome.";
RL   Hum. Genet. 114:22-26(2003).
CC   -!- FUNCTION: Receptor for GDNF. Mediates the GDNF-induced
CC       autophosphorylation and activation of the RET receptor (By
CC       similarity).
CC   -!- SUBUNIT: 2 molecules of GDNFR-alpha are thought to form a complex
CC       with the disulfide-linked GDNF dimer and with 2 molecules of RET
CC       (By similarity).
CC   -!- SUBCELLULAR LOCATION: Attached to the membrane by a GPI-anchor (By
CC       similarity).
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=2;
CC       Name=1;
CC         IsoId=P56159-1; Sequence=Displayed;
CC       Name=2;
CC         IsoId=P56159-2; Sequence=VSP_001660;
CC         Note=May be produced at very low levels due to a premature stop
CC         codon in the mRNA, leading to nonsense-mediated mRNA decay;
CC   -!- SIMILARITY: Belongs to the GDNFR family.
CC   ---------------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------------
DR   EMBL; U97144; AAC51646.1; -.
DR   EMBL; AF038420; AAC39693.1; -.
DR   EMBL; AF038411; AAC39693.1; JOINED.
DR   EMBL; AF038412; AAC39693.1; JOINED.
DR   EMBL; AF038413; AAC39693.1; JOINED.
DR   EMBL; AF038414; AAC39693.1; JOINED.
DR   EMBL; AF038415; AAC39693.1; JOINED.
DR   EMBL; AF038416; AAC39693.1; JOINED.
DR   EMBL; AF038417; AAC39693.1; JOINED.
DR   EMBL; AF038418; AAC39693.1; JOINED.
DR   EMBL; AF038419; AAC39693.1; JOINED.
DR   EMBL; AF038421; AAC39692.1; -.
DR   EMBL; AF042080; AAB97371.1; -.
```

```
DR   EMBL; AF058999; AAC14431.1; -.
DR   EMBL; AF058990; AAC14431.1; JOINED.
DR   EMBL; AF058991; AAC14431.1; JOINED.
DR   EMBL; AF058992; AAC14431.1; JOINED.
DR   EMBL; AF058993; AAC14431.1; JOINED.
DR   EMBL; AF058994; AAC14431.1; JOINED.
DR   EMBL; AF058995; AAC14431.1; JOINED.
DR   EMBL; AF058996; AAC14431.1; JOINED.
DR   EMBL; AF058997; AAC14431.1; JOINED.
DR   EMBL; AF058998; AAC14431.1; JOINED.
DR   EMBL; U95847; AAB71811.1; -.
DR   EMBL; BC014962; AAH14962.1; -.
DR   Genew; HGNC:4243; GFRA1.
DR   MIM; 601496; -.
DR   GO; GO:0019898; C:extrinsic to membrane; NAS.
DR   GO; GO:0004872; F:receptor activity; NAS.
DR   GO; GO:0007166; P:cell surface receptor linked signal transdu. . .; NAS.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Alternative splicing; Glycoprotein; GPI-anchor; Lipoprotein; Membrane;
KW   Polymorphism; Receptor; Signal.
FT   SIGNAL       1    24       Potential.
FT   CHAIN       25   429       GDNF family receptor alpha 1.
FT   PROPEP     430   465       Removed in mature form (Potential).
FT   DOMAIN     362   369       Poly-Thr.
FT   CARBOHYD    59    59       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD   347   347       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD   406   406       N-linked (GlcNAc. . .) (Potential).
FT   LIPID      429   429       GPI-anchor amidated serine (Potential).
FT   VARSPLIC   140   144       Missing (in isoform 2).
FT                              /FTId=VSP_001660.
FT   VARIANT     85    85       Y -> N (in dbSNP:8192662).
FT                              /FTId=VAR_012488.
FT   VARIANT    366   366       T -> A (in dbSNP:2072276).
FT                              /FTId=VAR_012489.
FT   VARIANT    371   371       L -> R (may be involved in congenital
FT                              central hypoventilation syndrome).
FT                              /FTId=VAR_018261.
FT   CONFLICT   245   245       Missing (in Ref. 1).
FT   CONFLICT   358   358       F -> P (in Ref. 1).
SQ   SEQUENCE   465 AA;  51455 MW;  91A550D06A6777BD CRC64;

  Query Match             32.9%;  Score 465;  DB 1;  Length 465;
  Best Local Similarity   41.9%;  Pred. No. 3.3e-31;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
               :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :    :   | |
Db        325 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


RESULT 14
Q7Z5C2
ID   Q7Z5C2      PRELIMINARY;      PRT;   331 AA.
AC   Q7Z5C2;
DT   01-OCT-2003 (TrEMBLrel. 25, Created)
DT   01-OCT-2003 (TrEMBLrel. 25, Last sequence update)
DT   01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE   Glial cell line-derived neurotrophic factor family receptor
DE   alpha2c.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Yoong L.F., Too H.P.;
RL   Submitted (JUN-2003) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY326396; AAP88378.1; -.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   Pfam; PF02351; GDNF; 1.
KW   Receptor.
SQ   SEQUENCE   331 AA;  36470 MW;  10ECEA5492E2393C CRC64;

  Query Match             32.8%;  Score 464;  DB 2;  Length 331;
  Best Local Similarity   38.7%;  Pred. No. 2.9e-31;
  Matches   92;  Conservative   38;  Mismatches  102;  Indels    6;  Gaps    3;

Qy         22 LGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRA 81
              ||         | : | |::||:||  :: |::||| |:: |           | | :| :|
Db         13 LGTGADPVVSAKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKA 70

Qy         82 LRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERS 141
              ||:|| | |   |: :||| |:  |||||||||  |:|::   :   |:||      |
Db         71 LRQFFDRVPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRGVCRTD 128

Qy        142 RRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAP 199
                || ||  | |:|  :  :   || :    || :|||::|  :||||:|:      |:|
Db        129 HLCRSRLADFHANCRASYQTVTSCPADNYQACLGSYAGMIGFDMTPNYVDSSPTGIVVSP 188

Qy        200 WCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNPYQNAGQAKVE 257
              || |  |||  |||| | : || ||||  ||||| :     :  :  :|      :||
Db        189 WCSCRGSGNMEEECEKFLRDFTENPCLRNAIQAFGNGTDVNVSPKGPSFQATQAPRVE 246


RESULT 15
O35252
ID   O35252      PRELIMINARY;      PRT;   463 AA.
AC   O35252;
DT   01-JAN-1998 (TrEMBLrel. 05, Created)
DT   01-JAN-1998 (TrEMBLrel. 05, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   GDNF receptor beta.
GN   Name=Gfra1; Synonyms=GDNFR-beta;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=C57;
RX   MEDLINE=98252741; PubMed=9592044;
RA   Dey B.K., Wong Y.W., Too H.P.;
RT   "Cloning of a novel murine isoform of the glial cell line-derived
RT   neurotrophic factor receptor.";
RL   Neuroreport 9:37-42(1998).
DR   EMBL; AF015172; AAB86600.1; -.
DR   MGD; MGI:1100842; Gfra1.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   InterPro; IPR003438; GDNF_receptor.
DR   InterPro; IPR003503; GDNF_receptorA1.
DR   Pfam; PF02351; GDNF; 1.
DR   PRINTS; PR01317; GDNFRALPHA1.
DR   PRINTS; PR01316; GDNFRECEPTOR.
KW   Receptor.
SQ   SEQUENCE   463 AA;  51134 MW;  EAF2A1522622C037 CRC64;

  Query Match             32.8%;  Score 464;  DB 2;  Length 463;
  Best Local Similarity   41.2%;  Pred. No. 4e-31;
  Matches   89;  Conservative   32;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         32 TEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPP 91
```

```
              ::|| |::||:||  |: |:: || |:  |          | | :| :|||:|| : |
Db        144 SKGNNCLDAAKACNLDDTCKKYRSAYITPCTTS---MSNEVCNRRKCHKALRQFFDKVPA 200

Qy         92 ALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAF 151
              :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        201 KHSYGMLFCSCRDVACTERRRQTIVPVCSYE--ERERPNCLNLQDSCKTNYICRSRLADF 258

Qy        152 QASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRRE 211
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  |
Db        259 FTNCQPESRSVSNCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLE 318

Qy        212 ECEAPRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              :|  |   |  | ||  ||||| :     :   | |
Db        319 DCLKFLNFFKDNTCLKNAIQAFGNGSDVTM---WQP 351


Search completed: January 26, 2005, 13:15:40
Job time : 193 secs
```

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: January 26, 2005, 13:09:51 ; Search time 40 Seconds
(without alignments)
427.751 Million cell updates/sec

Title: US-10-019-337E-9
Perfect score: 1413
Sequence: 1 MLSGAYLRVLNERPGQAVLW.....SVLQDQWNPYQNAGQAKVEA 258

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 478139 seqs, 66318000 residues

Total number of hits satisfying chosen parameters: 478139

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued_Patents_AA:*
1: /cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
2: /cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
3: /cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
4: /cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
5: /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	515	36.4	132	3	US-09-724-864-65	Sequence 65, Appl
2	469	33.2	445	4	US-08-861-990-11	Sequence 11, Appl
3	469	33.2	464	3	US-08-957-063-6	Sequence 6, Appli
4	469	33.2	464	3	US-09-487-685-6	Sequence 6, Appli
5	469	33.2	464	3	US-08-802-805D-6	Sequence 6, Appli
6	469	33.2	464	4	US-08-861-990-2	Sequence 2, Appli
7	469	33.2	464	4	US-09-388-316C-6	Sequence 6, Appli
8	469	33.2	664	3	US-08-957-063-18	Sequence 18, Appl
9	469	33.2	664	3	US-09-487-685-18	Sequence 18, Appl
10	469	33.2	664	3	US-08-802-805D-18	Sequence 18, Appl
11	469	33.2	664	4	US-09-388-316C-18	Sequence 18, Appl
12	465	32.9	346	4	US-09-187-906-9	Sequence 9, Appli
13	465	32.9	460	3	US-08-802-805D-22	Sequence 22, Appl
14	465	32.9	460	4	US-09-187-906-11	Sequence 11, Appl
15	465	32.9	463	4	US-08-837-199A-10	Sequence 10, Appl
16	465	32.9	463	4	US-08-837-199A-12	Sequence 12, Appl
17	465	32.9	465	4	US-08-837-199A-2	Sequence 2, Appli
18	465	32.9	465	4	US-08-837-199A-6	Sequence 6, Appli
19	465	32.9	465	4	US-08-861-990-8	Sequence 8, Appli
20	465	32.9	465	4	US-09-388-316C-22	Sequence 22, Appl
21	462	32.7	464	3	US-08-957-063-3	Sequence 3, Appli
22	462	32.7	464	3	US-09-487-685-3	Sequence 3, Appli
23	462	32.7	464	3	US-08-802-805D-3	Sequence 3, Appli
24	462	32.7	464	4	US-09-187-906-13	Sequence 13, Appl
25	462	32.7	464	4	US-08-861-990-9	Sequence 9, Appli
26	462	32.7	464	4	US-09-388-316C-3	Sequence 3, Appli
27	462	32.7	468	3	US-08-802-805D-21	Sequence 21, Appl
28	462	32.7	468	4	US-08-837-199A-4	Sequence 4, Appli
29	462	32.7	468	4	US-08-860-370-2	Sequence 2, Appli
30	462	32.7	468	4	US-09-187-906-2	Sequence 2, Appli
31	462	32.7	468	4	US-08-861-990-1	Sequence 1, Appli
32	462	32.7	468	4	US-09-388-316C-21	Sequence 21, Appl
33	462	32.7	664	3	US-08-957-063-16	Sequence 16, Appl
34	462	32.7	664	3	US-09-487-685-16	Sequence 16, Appl
35	462	32.7	664	3	US-08-802-805D-16	Sequence 16, Appl
36	462	32.7	664	4	US-09-388-316C-16	Sequence 16, Appl
37	399	28.2	232	4	US-08-837-199A-14	Sequence 14, Appl
38	399	28.2	294	4	US-08-837-199A-16	Sequence 16, Appl
39	364.5	25.8	346	4	US-09-187-906-15	Sequence 15, Appl
40	364.5	25.8	397	3	US-09-220-528-64	Sequence 64, Appl
41	364.5	25.8	397	4	US-09-187-906-17	Sequence 17, Appl
42	361	25.5	315	4	US-09-187-906-19	Sequence 19, Appl
43	361	25.5	400	3	US-09-220-528-63	Sequence 63, Appl
44	361	25.5	400	4	US-09-187-906-21	Sequence 21, Appl
45	255.5	18.1	219	4	US-08-837-199A-18	Sequence 18, Appl

ALIGNMENTS

RESULT 1
US-09-724-864-65
; Sequence 65, Application US/09724864
; Patent No. 6380362
; GENERAL INFORMATION:
; APPLICANT: Watson, James D
; APPLICANT: Murison, James G.
; TITLE OF INVENTION: Polynucleotides, polypeptides expressed
; TITLE OF INVENTION: by the polynucleotides and methods for their use.
; FILE REFERENCE: 11000.1050U1
; CURRENT APPLICATION NUMBER: US/09/724,864
; CURRENT FILING DATE: 2000-11-28
; PRIOR APPLICATION NUMBER: U.S. No. 6380362 60/171,678
; PRIOR FILING DATE: 1999-12-23
; NUMBER OF SEQ ID NOS: 72
; SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 65
; LENGTH: 132
; TYPE: PRT
; ORGANISM: Mouse
US-09-724-864-65

Query Match 36.4%; Score 515; DB 3; Length 132;
Best Local Similarity 94.0%; Pred. No. 2.4e-40;
Matches 94; Conservative 1; Mismatches 5; Indels 0; Gaps 0;

```
Qy        145 RPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCE 204
              |||| |||||||||||||| |||||||||| |||| :|||||||||||||||||||||
Db          9 RPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGCA 68

Qy        205 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db         69 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 108
```

RESULT 2
US-08-861-990-11
; Sequence 11, Application US/08861990
; Patent No. 6696259
; GENERAL INFORMATION:
; APPLICANT: Ibanez, Carlos F.
; APPLICANT: Arumae, Urmas
; APPLICANT: Sariola, Hannu
; APPLICANT: Suvanto, Petro
; APPLICANT: Trupp, Miles
; APPLICANT: Saarma, Mart
; TITLE OF INVENTION: Glial Cell Line-Derived Neurotropic Factor Receptors
; FILE REFERENCE: CEPH0418
; CURRENT APPLICATION NUMBER: US/08/861,990
; CURRENT FILING DATE: 1997-05-22

```
;  PRIOR APPLICATION NUMBER:  08/747,842
;  PRIOR FILING DATE:  1996-11-13
;  PRIOR APPLICATION NUMBER:  60/006,619
;  PRIOR FILING DATE:  1995-11-13
;  PRIOR APPLICATION NUMBER:  60/015,767
;  PRIOR FILING DATE:  1996-04-16
;  PRIOR APPLICATION NUMBER:  60/021,965
;  PRIOR FILING DATE:  1996-06-27
;  PRIOR APPLICATION NUMBER:  60/020,638
;  PRIOR FILING DATE:  1996-06-27
;  PRIOR APPLICATION NUMBER:  60/020,639
;  PRIOR FILING DATE:  1996-06-27
;  NUMBER OF SEQ ID NOS:  11
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 11
;   LENGTH: 445
;   TYPE: PRT
;   ORGANISM: Rattus sp.
US-08-861-990-11

  Query Match             33.2%;  Score 469;  DB 4;  Length 445;
  Best Local Similarity   43.0%;  Pred. No. 1.7e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
              |   |: :||| |:  |||||||||  |:|::   :   |:||     |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :   || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 3
US-08-957-063-6
; Sequence 6, Application US/08957063
; Patent No. 6025157
;  GENERAL INFORMATION:
;    APPLICANT:  Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
;    TITLE OF INVENTION:  Neurturin Receptor
;    NUMBER OF SEQUENCES:  19
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/957,063
;      FILING DATE:  24-Oct-1997
;      CLASSIFICATION:  800
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/871
;      FILING DATE:  9-Jun-1997
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  913
;      FILING DATE:  18-Feb-1997
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P1086P2
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  6:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  464 amino acids
;      TYPE:  Amino Acid
;      TOPOLOGY:  Linear
US-08-957-063-6

  Query Match             33.2%;  Score 469;  DB 3;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 1.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
              |   |: :||| |:  |||||||||  |:|::   :   |:||     |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :   || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 4
US-09-487-685-6
; Sequence 6, Application US/09487685
; Patent No. 6342348
;  GENERAL INFORMATION:
;       APPLICANT: Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
;       TITLE OF INVENTION: Neurturin Receptor
;       NUMBER OF SEQUENCES: 19
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Genentech, Inc.
;            STREET: 1 DNA Way
;            CITY: South San Francisco
;            STATE: California
;            COUNTRY: USA
;            ZIP: 94080
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: 3.5 inch, 1.44 Mb floppy disk
;            COMPUTER: IBM PC compatible
;            OPERATING SYSTEM: PC-DOS/MS-DOS
;            SOFTWARE: WinPatin (Genentech)
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/487,685
;            FILING DATE: 19-Jan-2000
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 08/957,063
;            FILING DATE: <Unknown>
;            APPLICATION NUMBER: 913
;            FILING DATE: 18-Feb-1997
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Torchia, PhD., Timothy E.
;            REGISTRATION NUMBER: 36,700
;            REFERENCE/DOCKET NUMBER: P1086P2
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650/225-8674
;            TELEFAX: 650/952-9881
;  INFORMATION FOR SEQ ID NO: 6:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 464 amino acids
;            TYPE: Amino Acid
```

```
;           TOPOLOGY: Linear
;        SEQUENCE DESCRIPTION: SEQ ID NO: 6:
US-09-487-685-6

  Query Match            33.2%;  Score 469;  DB 3;  Length 464;
  Best Local Similarity  43.0%;  Pred. No. 1.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 5
US-08-802-805D-6
; Sequence 6, Application US/08802805D
; Patent No. 6372453
;  GENERAL INFORMATION:
;    APPLICANT:  Robert D. Klein
;    TITLE OF INVENTION:  Neurturin Receptor
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/802,805D
;      FILING DATE:  18-Feb-1997
;      CLASSIFICATION:  536
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P1086
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  6:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  464 amino acids
;      TYPE:  Amino Acid
;      TOPOLOGY:  Linear
US-08-802-805D-6

  Query Match            33.2%;  Score 469;  DB 3;  Length 464;
  Best Local Similarity  43.0%;  Pred. No. 1.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 6
US-08-861-990-2
; Sequence 2, Application US/08861990
; Patent No. 6696259
; GENERAL INFORMATION:
;  APPLICANT:  Ibanez, Carlos F.
;  APPLICANT:  Arumae, Urmas
;  APPLICANT:  Sariola, Hannu
;  APPLICANT:  Suvanto, Petro
;  APPLICANT:  Trupp, Miles
;  APPLICANT:  Saarma, Mart
;  TITLE OF INVENTION:  Glial Cell Line-Derived Neurotropic Factor Receptors
;  FILE REFERENCE:  CEPH0418
;  CURRENT APPLICATION NUMBER: US/08/861,990
;  CURRENT FILING DATE:  1997-05-22
;  PRIOR APPLICATION NUMBER:  08/747,842
;  PRIOR FILING DATE:  1996-11-13
;  PRIOR APPLICATION NUMBER:  60/006,619
;  PRIOR FILING DATE:  1995-11-13
;  PRIOR APPLICATION NUMBER:  60/015,767
;  PRIOR FILING DATE:  1996-04-16
;  PRIOR APPLICATION NUMBER:  60/021,965
;  PRIOR FILING DATE:  1996-06-27
;  PRIOR APPLICATION NUMBER:  60/020,638
;  PRIOR FILING DATE:  1996-06-27
;  PRIOR APPLICATION NUMBER:  60/020,639
;  PRIOR FILING DATE:  1996-06-27
;  NUMBER OF SEQ ID NOS:  11
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 464
;   TYPE: PRT
;   ORGANISM: Rattus sp.
US-08-861-990-2

  Query Match            33.2%;  Score 469;  DB 4;  Length 464;
  Best Local Similarity  43.0%;  Pred. No. 1.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 7
US-09-388-316C-6
; Sequence 6, Application US/09388316C
; Patent No. 6777196
; GENERAL INFORMATION:
;  APPLICANT: KLEIN, ROBERT D.
```

```
;  APPLICANT:  ROSENTHAL, ARNON
;  APPLICANT:  HYNES, MARY A.
;  TITLE OF INVENTION: NEURTURIN RECEPTOR
;  FILE REFERENCE: GENENT.45A2DV1
;  CURRENT APPLICATION NUMBER: US/09/388,316C
;  CURRENT FILING DATE:  1999-09-01
;  PRIOR APPLICATION NUMBER: 09/024,665
;  PRIOR FILING DATE: 1998-02-17
;  PRIOR APPLICATION NUMBER: 60/063,258
;  PRIOR FILING DATE: 1997-10-24
;  PRIOR APPLICATION NUMBER: 60/049,818
;  PRIOR FILING DATE: 1997-06-09
;  PRIOR APPLICATION NUMBER: 60/038,839
;  PRIOR FILING DATE: 1997-02-18
;  NUMBER OF SEQ ID NOS: 30
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 6
;   LENGTH: 464
;   TYPE: PRT
;   ORGANISM: Ratticus norveticus
US-09-388-316C-6

  Query Match             33.2%;  Score 469;  DB 4;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 1.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 8
US-08-957-063-18
; Sequence 18, Application US/08957063
; Patent No. 6025157
;  GENERAL INFORMATION:
;    APPLICANT:  Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
;    TITLE OF INVENTION:  Neurturin Receptor
;    NUMBER OF SEQUENCES:  19
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/957,063
;      FILING DATE:  24-Oct-1997
;      CLASSIFICATION:  800
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/871
;      FILING DATE:  9-Jun-1997
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  913
;      FILING DATE:  18-Feb-1997
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P1086P2
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  18:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  664 amino acids
;      TYPE:  Amino Acid
;      TOPOLOGY:  Linear
US-08-957-063-18

  Query Match             33.2%;  Score 469;  DB 3;  Length 664;
  Best Local Similarity   43.0%;  Pred. No. 2.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 9
US-09-487-685-18
; Sequence 18, Application US/09487685
; Patent No. 6342348
;  GENERAL INFORMATION:
;       APPLICANT: Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
;       TITLE OF INVENTION: Neurturin Receptor
;       NUMBER OF SEQUENCES: 19
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Genentech, Inc.
;            STREET: 1 DNA Way
;            CITY: South San Francisco
;            STATE: California
;            COUNTRY: USA
;            ZIP: 94080
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: 3.5 inch, 1.44 Mb floppy disk
;            COMPUTER: IBM PC compatible
;            OPERATING SYSTEM: PC-DOS/MS-DOS
;            SOFTWARE: WinPatin (Genentech)
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/487,685
;            FILING DATE: 19-Jan-2000
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 08/957,063
;            FILING DATE: <Unknown>
;            APPLICATION NUMBER: 913
;            FILING DATE: 18-Feb-1997
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Torchia, PhD., Timothy E.
;            REGISTRATION NUMBER: 36,700
;            REFERENCE/DOCKET NUMBER: P1086P2
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650/225-8674
;            TELEFAX: 650/952-9881
;  INFORMATION FOR SEQ ID NO: 18:
;       SEQUENCE CHARACTERISTICS:
```

```
;             LENGTH: 664 amino acids
;             TYPE: Amino Acid
;             TOPOLOGY: Linear
;        SEQUENCE DESCRIPTION: SEQ ID NO: 18:
US-09-487-685-18

  Query Match            33.2%;  Score 469;  DB 3;  Length 664;
  Best Local Similarity  43.0%;  Pred. No. 2.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:|| :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
                |   |: :||| |:  |||||||||  |:|::   :   |:||      |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 10
US-08-802-805D-18
; Sequence 18, Application US/08802805D
; Patent No. 6372453
;  GENERAL INFORMATION:
;    APPLICANT:  Robert D. Klein
;    TITLE OF INVENTION:  Neurturin Receptor
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/802,805D
;      FILING DATE:  18-Feb-1997
;      CLASSIFICATION:  536
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P1086
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  18:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  664 amino acids
;      TYPE:  Amino Acid
;      TOPOLOGY:  Linear
US-08-802-805D-18

  Query Match            33.2%;  Score 469;  DB 3;  Length 664;
  Best Local Similarity  43.0%;  Pred. No. 2.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:|| :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
                |   |: :||| |:  |||||||||  |:|::   :   |:||      |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 11
US-09-388-316C-18
; Sequence 18, Application US/09388316C
; Patent No. 6777196
; GENERAL INFORMATION:
;  APPLICANT: KLEIN, ROBERT D.
;  APPLICANT:  ROSENTHAL, ARNON
;  APPLICANT:  HYNES, MARY A.
;  TITLE OF INVENTION: NEURTURIN RECEPTOR
;  FILE REFERENCE: GENENT.45A2DV1
;  CURRENT APPLICATION NUMBER: US/09/388,316C
;  CURRENT FILING DATE:  1999-09-01
;  PRIOR APPLICATION NUMBER: 09/024,665
;  PRIOR FILING DATE: 1998-02-17
;  PRIOR APPLICATION NUMBER: 60/063,258
;  PRIOR FILING DATE: 1997-10-24
;  PRIOR APPLICATION NUMBER: 60/049,818
;  PRIOR FILING DATE: 1997-06-09
;  PRIOR APPLICATION NUMBER: 60/038,839
;  PRIOR FILING DATE: 1997-02-18
;  NUMBER OF SEQ ID NOS: 30
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 18
;   LENGTH: 664
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: This sequence is a fusion protein comprising rat
;   OTHER INFORMATION: NTNRalpha sequence and human Fc sequence.
US-09-388-316C-18

  Query Match            33.2%;  Score 469;  DB 4;  Length 664;
  Best Local Similarity  43.0%;  Pred. No. 2.8e-35;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:|| :: |::||| |:: |          | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
                |   |: :||| |:  |||||||||  |:|::   :   |:||      |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
              | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 12
US-09-187-906-9
; Sequence 9, Application US/09187906
; Patent No. 6677135
;  GENERAL INFORMATION:
;    APPLICANT:  BIOGEN, INC.
;    TITLE OF INVENTION:  Ret Ligand (RetL) for Stimulating Neural
;    TITLE OF INVENTION:  and Renal Growth
```

```
;    NUMBER OF SEQUENCES:  21
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Biogen, Inc.
;      STREET:  14 Cambridge Center
;      CITY:  Cambridge
;      STATE:  MA
;      COUNTRY:  USA
;      ZIP:  02142
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/187,906
;      FILING DATE:
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/US97/07726
;      FILING DATE:  07-MAY-97
;      APPLICATION NUMBER:  US 60/017,427
;      FILING DATE:  08-MAY-96
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 60/019,300
;      FILING DATE:  07-JUN-96
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 60/021,859
;      FILING DATE:  16-JUL-96
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 60/043,533
;      FILING DATE:  10-APR-97
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Kaplan, Warren A.
;      REGISTRATION NUMBER:  34,199
;      REFERENCE/DOCKET NUMBER:  A008 PCT CIP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  617-679-2400
;      TELEFAX:  617-679-2838
;  INFORMATION FOR SEQ ID NO:  9:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  346 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-09-187-906-9

  Query Match             32.9%;  Score 465;  DB 4;  Length 346;
  Best Local Similarity   41.9%;  Pred. No. 3.1e-35;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |          | | :| :|||:|| : |
Db         31 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 87

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
              :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db         88 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 145

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        146 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 205

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   | || |||||  :     :   | |
Db        206 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 237


RESULT 13
US-08-802-805D-22
; Sequence 22, Application US/08802805D
; Patent No. 6372453
;  GENERAL INFORMATION:
;    APPLICANT:  Robert D. Klein
;    TITLE OF INVENTION:  Neurturin Receptor
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/802,805D
;      FILING DATE:  18-Feb-1997
;      CLASSIFICATION:  536
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P1086
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  22:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  460 amino acids
;      TYPE:  Amino Acid
;      TOPOLOGY:  Linear
US-08-802-805D-22

  Query Match             32.9%;  Score 465;  DB 3;  Length 460;
  Best Local Similarity   41.9%;  Pred. No. 4.3e-35;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |          | | :| :|||:|| : |
Db        145 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 201

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
              :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        202 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 259

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        260 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 319

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   | || |||||  :     :   | |
Db        320 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 351


RESULT 14
US-09-187-906-11
; Sequence 11, Application US/09187906
; Patent No. 6677135
;  GENERAL INFORMATION:
;    APPLICANT:  BIOGEN, INC.
;    TITLE OF INVENTION:  Ret Ligand (RetL) for Stimulating Neural
;    TITLE OF INVENTION:  and Renal Growth
;    NUMBER OF SEQUENCES:  21
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Biogen, Inc.
;      STREET:  14 Cambridge Center
;      CITY:  Cambridge
;      STATE:  MA
;      COUNTRY:  USA
;      ZIP:  02142
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
```

```
;       SOFTWARE:  PatentIn Release #1.0, Version #1.30
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/09/187,906
;       FILING DATE:
;       CLASSIFICATION:
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  PCT/US97/07726
;       FILING DATE:  07-MAY-97
;       APPLICATION NUMBER:  US 60/017,427
;       FILING DATE:  08-MAY-96
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 60/019,300
;       FILING DATE:  07-JUN-96
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 60/021,859
;       FILING DATE:  16-JUL-96
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 60/043,533
;       FILING DATE:  10-APR-97
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Kaplan, Warren A.
;       REGISTRATION NUMBER:  34,199
;       REFERENCE/DOCKET NUMBER:  A008 PCT CIP
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  617-679-2400
;       TELEFAX:  617-679-2838
;   INFORMATION FOR SEQ ID NO:  11:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  460 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-09-187-906-11

  Query Match             32.9%;  Score 465;  DB 4;  Length 460;
  Best Local Similarity   41.9%;  Pred. No. 4.3e-35;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db        145 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 201

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        202 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 259

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        260 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 319

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :     :   | |
Db        320 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 351


RESULT 15
US-08-837-199A-10
; Sequence 10, Application US/08837199A
; Patent No. 6455277
; GENERAL INFORMATION:
;  APPLICANT: FOX, GARY M.
;  APPLICANT:  JING, SHUQIAN
;  APPLICANT:  WEN, DUANZHI
;  TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
;  FILE REFERENCE: A-401C
;  CURRENT APPLICATION NUMBER: US/08/837,199A
;  CURRENT FILING DATE:  1997-04-14
;  PRIOR APPLICATION NUMBER: US 60/015,907
;  PRIOR FILING DATE: 1996-04-22
;  PRIOR APPLICATION NUMBER: US 60/017,221
;  PRIOR FILING DATE: 1996-05-09
;  NUMBER OF SEQ ID NOS: 47
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 10
;   LENGTH: 463
;   TYPE: PRT
;   ORGANISM: HUMAN
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (5)..(5)
;   OTHER INFORMATION: The 'Xaa' at location 5 stands for Thr, Ala, Pro, or Ser.
;   NAME/KEY: misc_feature
;   LOCATION: (1)..(537)
;   OTHER INFORMATION: No. 6455277e= "1 to 537 is -235 to 301 of Figure 5 21acon"
;   NAME/KEY: misc_feature
;   LOCATION: (550)..(550)
;   OTHER INFORMATION: N in position 550 indicates any nucleic acid
US-08-837-199A-10

  Query Match             32.9%;  Score 465;  DB 4;  Length 463;
  Best Local Similarity   41.9%;  Pred. No. 4.3e-35;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :     :   | |
Db        325 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


Search completed: January 26, 2005, 13:25:13
Job time : 41 secs
```

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: January 26, 2005, 12:53:26 ; Search time 158 Seconds
(without alignments)
585.773 Million cell updates/sec

Title: US-10-019-337E-9
Perfect score: 1413
Sequence: 1 MLSGAYLRVLNERPGQAVLW.....SVLQDQWNPYQNAGQAKVEA 258

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2002273 seqs, 358729299 residues

Total number of hits satisfying chosen parameters: 2002273

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_23Sep04:*
1: geneseqp1980s:*
2: geneseqp1990s:*
3: geneseqp2000s:*
4: geneseqp2001s:*
5: geneseqp2002s:*
6: geneseqp2003as:*
7: geneseqp2003bs:*
8: geneseqp2004s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB	ID	Description
1	1413	100.0	258	4	AAB61637	Aab61637 Rat GFRal
2	1386	98.1	273	4	AAB61636	Aab61636 Rat GFRal
3	1078	76.3	277	4	AAB62103	Aab62103 Mouse Ret
4	1078	76.3	476	4	AAB62107	Aab62107 Murine Re
5	1075.5	76.1	260	4	AAB62106	Aab62106 Mouse Ret
6	1075.5	76.1	260	4	ABB09214	Abb09214 Mouse GPI
7	1075.5	76.1	293	4	ABB09215	Abb09215 Mouse put
8	1028.5	72.8	264	4	AAB62104	Aab62104 Mouse Ret
9	927	65.6	340	2	AAY42771	Aay42771 Murine gl
10	920.5	65.1	269	4	ABB09217	Abb09217 Human GPI
11	914.5	64.7	282	4	AAB62105	Aab62105 Human Ret
12	767.5	54.3	299	4	ABB09218	Abb09218 Human put
13	649.5	46.0	182	4	ABB09219	Abb09219 Human put
14	569.5	40.3	190	4	ABB09216	Abb09216 Mouse sec
15	515	36.4	132	4	AAE05369	Aae05369 Mouse Gdn
16	515	36.4	132	5	ABB72385	Abb72385 Murine pr
17	469	33.2	460	2	AAW84181	Aaw84181 A GDNFR-a
18	469	33.2	464	2	AAW71602	Aaw71602 Rat neurt
19	469	33.2	464	2	AAW92299	Aaw92299 Rat GDNFR
20	469	33.2	464	3	AAY80122	Aay80122 Rat neurt
21	469	33.2	464	5	ABB79036	Abb79036 Rat neurt
22	469	33.2	464	5	ABB09630	Abb09630 Amino aci
23	469	33.2	464	5	AAU79266	Aau79266 Rat neurt
24	469	33.2	464	7	ADD11657	Add11657 Rat Neurt
25	469	33.2	464	7	ADE54591	Ade54591 Rat Prote
26	469	33.2	464	7	ADE63251	Ade63251 Rat Prote
27	469	33.2	664	2	AAW71604	Aaw71604 Rat neurt
28	469	33.2	664	3	AAY80124	Aay80124 Rat NTNR
29	469	33.2	664	5	ABB79038	Abb79038 Rat NTNRa
30	469	33.2	664	5	ABB09632	Abb09632 Rat neurt
31	469	33.2	664	5	AAU79268	Aau79268 Rat NTNR-
32	469	33.2	664	7	ADD11669	Add11669 Rat NTNRa
33	469	33.2	951	3	AAY15180	Aay15180 gD-GFRalp
34	467	33.1	330	2	AAW81627	Aaw81627 Mouse TGF
35	465	32.9	346	2	AAW37458	Aaw37458 Human Ret
36	465	32.9	346	8	ADJ58701	Adj58701 Human ret
37	465	32.9	411	2	AAW81625	Aaw81625 Mouse mat
38	465	32.9	460	2	AAW37459	Aaw37459 Human Ret
39	465	32.9	460	3	AAY15175	Aay15175 Human GFR
40	465	32.9	460	6	ABP97180	Abp97180 Tumour-as
41	465	32.9	460	8	ADJ58703	Adj58703 Human ret
42	465	32.9	463	2	AAW81624	Aaw81624 Mouse TGF
43	465	32.9	463	2	AAW84167	Aaw84167 GDNFR-alp
44	465	32.9	463	2	AAW84166	Aaw84166 GDNFR-alp
45	465	32.9	465	2	AAW35333	Aaw35333 Human gli

ALIGNMENTS

RESULT 1
AAB61637
ID AAB61637 standard; protein; 258 AA.
XX
AC AAB61637;
XX
DT 06-APR-2001 (first entry)
XX
DE Rat GFRalpha-4 splice variant B.
XX
KW Rat; GFRalpha-4; carcinoma; familial hirschsprung disease; pain;
KW glial cell-line derived neurotrophic factor; neurodegenerative disease;
KW GDNF family receptor alpha-4; Alzheimer's disease; Parkinson's disease;
KW motor neuron disease; peripheral neuropathy; spinal cord injury;
KW chromosome 3q36.
XX
OS Rattus rattus.
XX
PN WO200102557-A1.
XX
PD 11-JAN-2001.
XX
PF 26-MAY-2000; 2000WO-EP004918.
XX
PR 29-JUN-1999; 99GB-00015200.
XX
PA (JANC) JANSSEN PHARM NV.
XX
PI Masure SLJ, Cik M, Hoefnagel EW;
XX
DR WPI; 2001-138137/14.
DR N-PSDB; AAF31061, AAF31063.
XX
PT Glial cell-line derived neurotrophic factor family receptor alpha-4,
PT useful for preparing medicaments for treating neurodegenerative diseases
PT (e.g. Alzheimer's disease, Parkinson's disease) and carcinomas.
XX
PS Claim 14; Page 74-75; 82pp; English.
XX
CC The present sequence is rat Glial cell-line Derived Neurotrophic Factor
CC (GDNF) family receptor alpha-4 (GFRalpha-4) splice variant B. GFRalpha-4
CC is useful in the preparation of a medicament for the treatment of
CC neurodegenerative diseases, Alzheimer's disease, Parkinson's disease,
CC motor neuron disease, peripheral neuropathy, spinal cord injury, familial
CC hirschsprung disease, carcinomas, and diseases associated with GFRalpha-4
CC receptor dysfunction and in alleviating pain. The rat GFRalpha-4 gene
CC (see AAF31061) is localised on chromosome 3q36
XX

```
SQ   Sequence 258 AA;

  Query Match             100.0%;  Score 1413;  DB 4;  Length 258;
  Best Local Similarity   100.0%;  Pred. No. 2.1e-123;
  Matches  258;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60

Qy         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120

Qy        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180

Qy        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240

Qy        241 LQDQWNPYQNAGQAKVEA 258
              ||||||||||||||||||
Db        241 LQDQWNPYQNAGQAKVEA 258


RESULT 2
AAB61636
ID   AAB61636 standard; protein; 273 AA.
XX
AC   AAB61636;
XX
DT   06-APR-2001  (first entry)
XX
DE   Rat GFRalpha-4 splice variant A.
XX
KW   Rat; GFRalpha-4; carcinoma; familial hirschsprung disease; pain;
KW   glial cell-line derived neurotrophic factor; neurodegenerative disease;
KW   GDNF family receptor alpha-4; Alzheimer's disease; Parkinson's disease;
KW   motor neuron disease; peripheral neuropathy; spinal cord injury;
KW   chromosome 3q36.
XX
OS   Rattus rattus.
XX
PN   WO200102557-A1.
XX
PD   11-JAN-2001.
XX
PF   26-MAY-2000; 2000WO-EP004918.
XX
PR   29-JUN-1999;   99GB-00015200.
XX
PA   (JANC ) JANSSEN PHARM NV.
XX
PI   Masure SLJ,  Cik M,  Hoefnagel EW;
XX
DR   WPI; 2001-138137/14.
DR   N-PSDB; AAF31061, AAF31062.
XX
PT   Glial cell-line derived neurotrophic factor family receptor alpha-4,
PT   useful for preparing medicaments for treating neurodegenerative diseases
PT   (e.g. Alzheimer's disease, Parkinson's disease) and carcinomas.
XX
PS   Claim 14; Page 73-74; 82pp; English.
XX
CC   The present sequence is rat Glial cell-line Derived Neurotrophic Factor
CC   (GDNF) family receptor alpha-4 (GFRalpha-4) splice variant A. GFRalpha-4
CC   is useful in the preparation of a medicament for the treatment of
CC   neurodegenerative diseases, Alzheimer's disease, Parkinson's disease,
CC   motor neuron disease, peripheral neuropathy, spinal cord injury, familial
CC   hirschsprung disease, carcinomas, and diseases associated with GFRalpha-4
CC   receptor dysfunction and in alleviating pain. The rat GFRalpha-4 gene
CC   (see AAF31061) is localised on chromosome 3q36
XX
SQ   Sequence 273 AA;

  Query Match             98.1%;  Score 1386;  DB 4;  Length 273;
  Best Local Similarity   100.0%;  Pred. No. 7.5e-121;
  Matches  252;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MLSGAYLRVLNERPGQAVLWSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQ 60

Qy         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 CLGRAGWRGPGSCVRSRCRRALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACA 120

Qy        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 FSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGL 180

Qy        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSV 240

Qy        241 LQDQWNPYQNAG 252
              ||||||||||||
Db        241 LQDQWNPYQNAG 252


RESULT 3
AAB62103
ID   AAB62103 standard; protein; 277 AA.
XX
AC   AAB62103;
XX
DT   29-MAY-2001  (first entry)
XX
DE   Mouse RetL5 polypeptide.
XX
KW   Ret ligand 5; RetL5; autophosphorylation; tumour; renal; nephrotropic;
KW   Alzheimer's disease; Parkinson's disease; Huntington's disease; mouse;
KW   vulnerary; nootropic; anti-HIV; neuroprotective; antibacterial;
KW   cerebroprotective; hemostatic; antiinflammatory; antiviral; neuroleptic.
XX
OS   Mus sp.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /note= "signal peptide"
FT   Protein         22. .277
FT                   /note= "mature protein"
XX
PN   WO200116169-A2.
XX
PD   08-MAR-2001.
XX
PF   01-SEP-2000; 2000WO-US024111.
XX
PR   01-SEP-1999;   99US-0152024P.
XX
PA   (BIOJ ) BIOGEN INC.
XX
PI   Worley D;
XX
DR   WPI; 2001-235091/24.
DR   N-PSDB; AAF57270.
XX
PT   Novel Ret ligand polypeptide useful for suppressing growth of a tumor
PT   cell that expresses Ret and for modulating Ret signal transduction
PT   involving a cell expressing Ret polypeptide or Ret ligand polypeptide.
XX
PS   Claim 13; Fig 3; 76pp; English.
XX
```

CC The invention relates to mouse and human Ret ligand 5 (RetL5)
CC polypeptides. The RetL5 polypeptides can be expressed by standard
CC recombinant methodology. The RetL5 when bound to Ret, acts as a
CC dimerization or autophosphorylation activator. The polypeptides and their
CC antibodies are useful for stimulating growth of or limiting damage to,
CC Ret expressing tissue in a subject, for suppressing growth of a tumour
CC cell that expresses Ret, for modulating Ret signal transduction involving
CC a cell expressing the Ret polypeptide. The RetL5 polypeptides, fusion
CC proteins containing RetL5 and antibodies are useful for stimulating renal
CC tissue growth and/or survival, supporting renal function and minimizing
CC damage to renal tissue after various insults, particularly for treating
CC acute renal failure, acute nephritis, chronic renal failure, nephrotic
CC syndrome, renal tubule defects, kidney transplants, toxic injury, hypoxic
CC injury and trauma. The compounds are also useful for treating conditions
CC such as neural degeneration where neural growth and regeneration are
CC desirable, e.g., Alzheimer's disease, Parkinson's disease, Huntington's
CC disease, Tourette's syndrome, amyotrophic lateral sclerosis, as well as
CC motor neuron disease, demyelinating disease, bacterial diseases, viral
CC diseases, and prion diseases including Creutzfeldt-Jakob disease. The
CC compounds are also useful for treating disorders due to damage to neural
CC tissue caused by neoplastic impingement, trauma or cerebrovascular events
CC such as hemorrhage or emboli, and neural disorders such as mental
CC retardation, autism, fetal alcohol syndrome, Down's syndrome and cerebral
CC palsy. The present sequence represents the mouse RetL5 polypeptide
CC predicted by visual inspection method
XX
SQ Sequence 277 AA;

Query Match 76.3%; Score 1078; DB 4; Length 277;
Best Local Similarity 87.4%; Pred. No. 4.1e-92;
Matches 201; Conservative 7; Mismatches 14; Indels 8; Gaps 2;

```
Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||   |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:|||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNPYQNAGQ 253
              |||||||||||||||||||||||||||||||| |||||||     | |||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQD-----QTAGQ 240
```

RESULT 4
AAB62107
ID AAB62107 standard; protein; 476 AA.
XX
AC AAB62107;
XX
DT 29-MAY-2001 (first entry)
XX
DE Murine RetL5/human IgG Fc fusion protein.
XX
KW Ret ligand 5; RetL5; autophosphorylation; tumour; renal; nephrotropic;
KW Alzheimer's disease; Parkinson's disease; Huntington's disease; mouse;
KW vulnerary; nootropic; anti-HIV; neuroprotective; antibacterial;
KW cerebroprotective; hemostatic; antiinflammatory; antiviral; neuroleptic;
KW IgG; fusion protein; GDNF; neublastin; NBN.
XX
OS Mus sp.
XX
PN WO200116169-A2.
XX
PD 08-MAR-2001.
XX
PF 01-SEP-2000; 2000WO-US024111.
XX
PR 01-SEP-1999; 99US-0152024P.
XX
PA (BIOJ) BIOGEN INC.
XX
PI Worley D;
XX
DR WPI; 2001-235091/24.
XX
PT Novel Ret ligand polypeptide useful for suppressing growth of a tumor
PT cell that expresses Ret and for modulating Ret signal transduction
PT involving a cell expressing Ret polypeptide or Ret ligand polypeptide.
XX
PS Example 10; Page 39-40; 76pp; English.
XX
CC The invention relates to mouse and human Ret ligand 5 (RetL5)
CC polypeptides. The RetL5 polypeptides can be expressed by standard
CC recombinant methodology. The RetL5 when bound to Ret, acts as a
CC dimerization or autophosphorylation activator. The polypeptides and their
CC antibodies are useful for stimulating growth of or limiting damage to,
CC Ret expressing tissue in a subject, for suppressing growth of a tumour
CC cell that expresses Ret, for modulating Ret signal transduction involving
CC a cell expressing the Ret polypeptide. The RetL5 polypeptides, fusion
CC proteins containing RetL5 and antibodies are useful for stimulating renal
CC tissue growth and/or survival, supporting renal function and minimizing
CC damage to renal tissue after various insults, particularly for treating
CC acute renal failure, acute nephritis, chronic renal failure, nephrotic
CC syndrome, renal tubule defects, kidney transplants, toxic injury, hypoxic
CC injury and trauma. The compounds are also useful for treating conditions
CC such as neural degeneration where neural growth and regeneration are
CC desirable, e.g., Alzheimer's disease, Parkinson's disease, Huntington's
CC disease, Tourette's syndrome, amyotrophic lateral sclerosis, as well as
CC motor neuron disease, demyelinating disease, bacterial diseases, viral
CC diseases, and prion diseases including Creutzfeldt-Jakob disease. The
CC compounds are also useful for treating disorders due to damage to neural
CC tissue caused by neoplastic impingement, trauma or cerebrovascular events
CC such as hemorrhage or emboli, and neural disorders such as mental
CC retardation, autism, fetal alcohol syndrome, Down's syndrome and cerebral
CC palsy. The present sequence represents a murine RetL5 and a human IgG Fc
CC fusion protein. This fusion protein interacts with GDNF family member
CC neublastin, NBN
XX
SQ Sequence 476 AA;

Query Match 76.3%; Score 1078; DB 4; Length 476;
Best Local Similarity 87.4%; Pred. No. 7.6e-92;
Matches 201; Conservative 7; Mismatches 14; Indels 8; Gaps 2;

```
Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||   |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:|||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNPYQNAGQ 253
              |||||||||||||||||||||||||||||||| |||||||     | |||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQD-----QTAGQ 240
```

RESULT 5
AAB62106
ID AAB62106 standard; protein; 260 AA.
XX
AC AAB62106;
XX
DT 29-MAY-2001 (first entry)
XX
DE Mouse RetL5 alternatively spliced polypeptide.

XX
KW Ret ligand 5; RetL5; autophosphorylation; tumour; renal; nephrotropic;
KW Alzheimer's disease; Parkinson's disease; Huntington's disease; mouse;
KW vulnerary; nootropic; anti-HIV; neuroprotective; antibacterial;
KW cerebroprotective; hemostatic; antiinflammatory; antiviral; neuroleptic.
XX
OS Mus sp.
XX
PN WO200116169-A2.
XX
PD 08-MAR-2001.
XX
PF 01-SEP-2000; 2000WO-US024111.
XX
PR 01-SEP-1999; 99US-0152024P.
XX
PA (BIOJ) BIOGEN INC.
XX
PI Worley D;
XX
DR WPI; 2001-235091/24.
DR N-PSDB; AAF57273.
XX
PT Novel Ret ligand polypeptide useful for suppressing growth of a tumor
PT cell that expresses Ret and for modulating Ret signal transduction
PT involving a cell expressing Ret polypeptide or Ret ligand polypeptide.
XX
PS Disclosure; Fig 8; 76pp; English.
XX
CC The invention relates to mouse and human Ret ligand 5 (RetL5)
CC polypeptides. The RetL5 polypeptides can be expressed by standard
CC recombinant methodology. The RetL5 when bound to Ret, acts as a
CC dimerization or autophosphorylation activator. The polypeptides and their
CC antibodies are useful for stimulating growth of or limiting damage to,
CC Ret expressing tissue in a subject, for suppressing growth of a tumour
CC cell that expresses Ret, for modulating Ret signal transduction involving
CC a cell expressing the Ret polypeptide. The RetL5 polypeptides, fusion
CC proteins containing RetL5 and antibodies are useful for stimulating renal
CC tissue growth and/or survival, supporting renal function and minimizing
CC damage to renal tissue after various insults, particularly for treating
CC acute renal failure, acute nephritis, chronic renal failure, nephrotic
CC syndrome, renal tubule defects, kidney transplants, toxic injury, hypoxic
CC injury and trauma. The compounds are also useful for treating conditions
CC such as neural degeneration where neural growth and regeneration are
CC desirable, e.g., Alzheimer's disease, Parkinson's disease, Huntington's
CC disease, Tourette's syndrome, amyotrophic lateral sclerosis, as well as
CC motor neuron disease, demyelinating disease, bacterial diseases, viral
CC diseases, and prion diseases including Creutzfeldt-Jakob disease. The
CC compounds are also useful for treating disorders due to damage to neural
CC tissue caused by neoplastic impingement, trauma or cerebrovascular events
CC such as hemorrhage or emboli, and neural disorders such as mental
CC retardation, autism, fetal alcohol syndrome, Down's syndrome and cerebral
CC palsy. The present sequence represents an alternatively spliced mouse
CC RetL5 polypeptide
XX
SQ Sequence 260 AA;

Query Match 76.1%; Score 1075.5; DB 4; Length 260;
Best Local Similarity 89.6%; Pred. No. 6.5e-92;
Matches 198; Conservative 7; Mismatches 13; Indels 3; Gaps 1;

```
Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||    |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:||||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195
```

```
Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||||||| ||||||||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 236
```

RESULT 6
ABB09214
ID ABB09214 standard; protein; 260 AA.
XX
AC ABB09214;
XX
DT 08-JUL-2002 (first entry)
XX
DE Mouse GPI-anchored isoform a1 protein SEQ ID NO:1.
XX
KW GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW glial cell line derived neurotrophic factor; osteopathic; tumour;
KW neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW neuronal disorder; aberrant axonal sprouting.
XX
OS Mus musculus.
XX
PN WO200162795-A1.
XX
PD 30-AUG-2001.
XX
PF 14-NOV-2000; 2000WO-FI000994.
XX
PR 21-FEB-2000; 2000FI-00000394.
XX
PA (LICE-) LICENTIA LTD.
XX
PI Airaksinen M, Saarma M, Poteriaev D, Lindahl M, Timmusk T;
PI Rossi J;
XX
DR WPI; 2001-596722/67.
DR N-PSDB; ABL51669.
XX
PT New nucleic acid sequence for manufacturing polypeptides for treating
PT endocrine cancers comprises a cDNA encoding a splicing isoform of
PT mammalian growth factor receptor (GFR)alpha4.
XX
PS Claim 9; Fig 18B; 143pp; English.
XX
CC The present invention describes an isolated and purified cDNA sequence
CC encoding a splicing isoform of a mammalian growth factor receptor
CC (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC polynucleotide sequence can be used for recording GFRalpha4 mediated
CC signalling in neurons or endocrine cells such as thyroid calcitonin-
CC producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC polynucleotide sequences can be are used for manufacturing polypeptides
CC useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC preventing neuronal death or aberrant axonal sprouting. The present
CC sequence represents the mouse GFRalpha 4 protein, designated GPI-anchored
CC isoform a1, from the present invention
XX
SQ Sequence 260 AA;

Query Match 76.1%; Score 1075.5; DB 4; Length 260;
Best Local Similarity 89.6%; Pred. No. 6.5e-92;
Matches 198; Conservative 7; Mismatches 13; Indels 3; Gaps 1;

```
Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||    |  ||| ||||||||||
```

```
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:|||||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 236


RESULT 7
ABB09215
ID   ABB09215 standard; protein; 293 AA.
XX
AC   ABB09215;
XX
DT   08-JUL-2002  (first entry)
XX
DE   Mouse putative transmembrane isoform a2 protein SEQ ID NO:2.
XX
KW   GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW   glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW   glial cell line derived neurotrophic factor; osteopathic; tumour;
KW   neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW   medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW   neuronal disorder; aberrant axonal sprouting.
XX
OS   Mus musculus.
XX
PN   WO200162795-A1.
XX
PD   30-AUG-2001.
XX
PF   14-NOV-2000; 2000WO-FI000994.
XX
PR   21-FEB-2000; 2000FI-00000394.
XX
PA   (LICE-) LICENTIA LTD.
XX
PI   Airaksinen M,  Saarma M,  Poteriaev D,  Lindahl M,  Timmusk T;
PI   Rossi J;
XX
DR   WPI; 2001-596722/67.
DR   N-PSDB; ABL51670.
XX
PT   New nucleic acid sequence for manufacturing polypeptides for treating
PT   endocrine cancers comprises a cDNA encoding a splicing isoform of
PT   mammalian growth factor receptor (GFR)alpha4.
XX
PS   Claim 9; Fig 19B; 143pp; English.
XX
CC   The present invention describes an isolated and purified cDNA sequence
CC   encoding a splicing isoform of a mammalian growth factor receptor
CC   (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC   osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC   a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC   neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC   polynucleotide sequence can be used for recording GFRalpha4 mediated
CC   signalling in neurons or endocrine cells such as thyroid calcitonin-
CC   producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC   cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC   polynucleotide sequences can be are used for manufacturing polypeptides
CC   useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC   adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC   neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC   pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC   preventing neuronal death or aberrant axonal sprouting. The present
CC   sequence represents the mouse GFRalpha 4 protein, designated putative
CC   transmembrane isoform a2, from the present invention
XX
SQ   Sequence 293 AA;

  Query Match             76.1%;  Score 1075.5;  DB 4;  Length 293;
  Best Local Similarity   89.6%;  Pred. No. 7.4e-92;
  Matches  198;  Conservative    7;  Mismatches   13;  Indels    3;  Gaps    1;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:||||||||||:||||||||||:|||||    |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:|||||||||||||||||||||||
Db        136 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 195

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db        196 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 236


RESULT 8
AAB62104
ID   AAB62104 standard; protein; 264 AA.
XX
AC   AAB62104;
XX
DT   29-MAY-2001  (first entry)
XX
DE   Mouse RetL5 polypeptide.
XX
KW   Ret ligand 5; RetL5; autophosphorylation; tumour; renal; nephrotropic;
KW   Alzheimer's disease; Parkinson's disease; Huntington's disease; mouse;
KW   vulnerary; nootropic; anti-HIV; neuroprotective; antibacterial;
KW   cerebroprotective; hemostatic; antiinflammatory; antiviral; neuroleptic.
XX
OS   Mus sp.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /note= "signal peptide"
FT   Protein         22. .264
FT                   /note= "mature protein"
XX
PN   WO200116169-A2.
XX
PD   08-MAR-2001.
XX
PF   01-SEP-2000; 2000WO-US024111.
XX
PR   01-SEP-1999;   99US-0152024P.
XX
PA   (BIOJ ) BIOGEN INC.
XX
PI   Worley D;
XX
DR   WPI; 2001-235091/24.
DR   N-PSDB; AAF57271.
XX
PT   Novel Ret ligand polypeptide useful for suppressing growth of a tumor
PT   cell that expresses Ret and for modulating Ret signal transduction
PT   involving a cell expressing Ret polypeptide or Ret ligand polypeptide.
XX
PS   Claim 13; Fig 4; 76pp; English.
XX
CC   The invention relates to mouse and human Ret ligand 5 (RetL5)
CC   polypeptides. The RetL5 polypeptides can be expressed by standard
CC   recombinant methodology. The RetL5 when bound to Ret, acts as a
CC   dimerization or autophosphorylation activator. The polypeptides and their
```

```
CC   antibodies are useful for stimulating growth of or limiting damage to,
CC   Ret expressing tissue in a subject, for suppressing growth of a tumour
CC   cell that expresses Ret, for modulating Ret signal transduction involving
CC   a cell expressing the Ret polypeptide. The RetL5 polypeptides, fusion
CC   proteins containing RetL5 and antibodies are useful for stimulating renal
CC   tissue growth and/or survival, supporting renal function and minimizing
CC   damage to renal tissue after various insults, particularly for treating
CC   acute renal failure, acute nephritis, chronic renal failure, nephrotic
CC   syndrome, renal tubule defects, kidney transplants, toxic injury, hypoxic
CC   injury and trauma. The compounds are also useful for treating conditions
CC   such as neural degeneration where neural growth and regeneration are
CC   desirable, e.g., Alzheimer's disease, Parkinson's disease, Huntington's
CC   disease, Tourette's syndrome, amyotrophic lateral sclerosis, as well as
CC   motor neuron disease, demyelinating disease, bacterial diseases, viral
CC   diseases, and prion diseases including Creutzfeldt-Jakob disease. The
CC   compounds are also useful for treating disorders due to damage to neural
CC   tissue caused by neoplastic impingement, trauma or cerebrovascular events
CC   such as hemorrhage or emboli, and neural disorders such as mental
CC   retardation, autism, fetal alcohol syndrome, Down's syndrome and cerebral
CC   palsy. The present sequence represents the mouse RetL5 polypeptide
CC   predicted from DSW300 sequence by GENESCAN/GENE ALEX
XX
SQ   Sequence 264 AA;

  Query Match             72.8%;  Score 1028.5;  DB 4;  Length 264;
  Best Local Similarity   86.9%;  Pred. No. 1.6e-87;
  Matches  192;  Conservative    7;  Mismatches   13;  Indels    9;  Gaps    2;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||    |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||       |||||||||| |||||||||| ||||:||||||||||||||||||||||
Db        136 CR------CASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 189

Qy        204 EASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db        190 AASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 230


RESULT 9
AAY42771
ID   AAY42771 standard; protein; 340 AA.
XX
AC   AAY42771;
XX
DT   05-JAN-2000  (first entry)
XX
DE   Murine glial derived neurotrophic factor receptor-alpha-X protein.
XX
KW   Glial derived neurotrophic factor-alpha-X; GFR-alpha-X; neural cell;
KW   survival; function; nervous system; signalling; diagnosis; treatment;
KW   neurological disorder; sensory disorder; Dejerine-Roussy syndrome;
KW   contralateral anaesthesia; eating disorder; obesity; motor disorder;
KW   Parkinson's disease; amyotrophic lateral sclerosis; ALS;
KW   cognitive disorder; Alzheimer's disease.
XX
OS   Mus sp.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 201
FT                   /note= "Encoded by ANG"
FT   Misc-difference 217
FT                   /note= "Encoded by AAN"
FT   Misc-difference 340
FT                   /note= "Encoded by TG"
XX
PN   WO9950298-A1.
XX
PD   07-OCT-1999.
XX
PF   25-MAR-1999;   99WO-US006631.
XX
PR   31-MAR-1998;   98US-0080070P.
XX
PA   (MILL-) MILLENNIUM PHARM INC.
XX
PI   Moore KJ;
XX
DR   WPI; 1999-591276/50.
DR   N-PSDB; AAZ28259.
XX
PT   A nucleic acid molecule that encodes GDNF Family Receptor alpha-X
PT   protein, methods of isolation and antibodies - useful for the detection
PT   of homologues and identification of binding compounds.
XX
PS   Claim 1; Fig 1; 100pp; English.
XX
CC   This sequence represents murine glial derived neurotrophic factor
CC   receptor-alpha-X (GFR-alpha-X) protein. GFR-alpha-X is a fourth member of
CC   the glial derived neurotrophic (GFR-alpha) family of receptors. The cDNA
CC   was identified in a positional cloning process in which the mouse
CC   mahogany locus was being sequenced to identify genes involved in obesity.
CC   The GFR-alpha-X protein binds to neurotrophic factors such as GDNF (glial
CC   cell line-derived neurotrophic factor) and/or NTN (neurturin), and
CC   mediates signalling within cells expressing the GFR-alpha-X protein. GFR-
CC   alpha-X, like the other three member of the GFR-alpha family (GFR-alpha-
CC   1, -2, and -3), transmits a signal to the interior of a cell by
CC   activation of the RET protein tyrosine kinase signalling pathway.
CC   Neurotrophic factors promote survival and function of neural cells of
CC   both the central and peripheral nervous systems. Modulation of GFR-alpha-
CC   X activity can result in modulation of the neurotrophic factor- initiated
CC   cell function. Probes and/or primers derived from GFR-alpha-X cDNA, and
CC   antibodies against the protein are used to detect the presence of GFR-
CC   alpha-X nucleic acids or protein and can be used in the diagnosis and
CC   treatment of a variety of neurological disorders, including sensory
CC   disorders (e.g., Dejerine-Roussy syndrome, contralateral anaesthesia, and
CC   certain eating disorders), motor disorders (e.g., Parkinson's disease,
CC   amyotrophic lateral sclerosis), and cognitive disorders (e.g.,
CC   Alzheimer's disease). In addition, compounds which bind to GFR-alpha-X
CC   may be used to modulate the activity of the protein
XX
SQ   Sequence 340 AA;

  Query Match             65.6%;  Score 927;  DB 2;  Length 340;
  Best Local Similarity   68.2%;  Pred. No. 6.3e-78;
  Matches  180;  Conservative   10;  Mismatches   28;  Indels   46;  Gaps    3;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||    |  ||| |||||||| ||
Db         19 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRPLR 78

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||| |||||||||||||||||| | |||||:||:||||||
Db         79 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 138

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGC 203
              ||||| |||||||||||||| |||||||||| ||||:||||||||||||||||||||||
Db        139 CRPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGC 198

Qy        204 EASGNRREECEAFRK--------------------------------LFTRN------- 223
              |          :  :                                   |||  :
Db        199 AAXWKPARRMRSLPQALYXGTPAWVRGPGGPGEPRMSVAQSKLPGPWVLFTSHHVWCGRW 258

Qy        224 ---PCLDGAIQAFDSSQPSVLQDQ 244
                 | ||||||||| ||||||||
Db        259 TVCTCHDGAIQAFDSLQPSVLQDQ 282


RESULT 10
ABB09217
```

```
ID   ABB09217 standard; protein; 269 AA.
XX
AC   ABB09217;
XX
DT   08-JUL-2002  (first entry)
XX
DE   Human GPI-anchored isoform a protein SEQ ID NO:4.
XX
KW   GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW   glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW   glial cell line derived neurotrophic factor; osteopathic; tumour;
KW   neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW   medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW   neuronal disorder; aberrant axonal sprouting.
XX
OS   Homo sapiens.
XX
PN   WO200162795-A1.
XX
PD   30-AUG-2001.
XX
PF   14-NOV-2000; 2000WO-FI000994.
XX
PR   21-FEB-2000; 2000FI-00000394.
XX
PA   (LICE-) LICENTIA LTD.
XX
PI   Airaksinen M,  Saarma M,  Poteriaev D,  Lindahl M,  Timmusk T;
PI   Rossi J;
XX
DR   WPI; 2001-596722/67.
DR   N-PSDB; ABL51672.
XX
PT   New nucleic acid sequence for manufacturing polypeptides for treating
PT   endocrine cancers comprises a cDNA encoding a splicing isoform of
PT   mammalian growth factor receptor (GFR)alpha4.
XX
PS   Claim 9; Fig 21B; 143pp; English.
XX
CC   The present invention describes an isolated and purified cDNA sequence
CC   encoding a splicing isoform of a mammalian growth factor receptor
CC   (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC   osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC   a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC   neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC   polynucleotide sequence can be used for recording GFRalpha4 mediated
CC   signalling in neurons or endocrine cells such as thyroid calcitonin-
CC   producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC   cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC   polynucleotide sequences can be are used for manufacturing polypeptides
CC   useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC   adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC   neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC   pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC   preventing neuronal death or aberrant axonal sprouting. The present
CC   sequence represents the human GFRalpha 4 protein, designated GPI-anchored
CC   isoform a, from the present invention
XX
SQ   Sequence 269 AA;

  Query Match          65.1%;  Score 920.5;  DB 4;  Length 269;
  Best Local Similarity   78.3%;  Pred. No. 1.9e-77;
  Matches  173;  Conservative   11;  Mismatches   34;  Indels    3;  Gaps    1;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              |||||  |||||:||||||| :||:|||||||||||||     | | |:||||||||||
Db         16 GSASSVGGNRCVDAAEACTADARCQRLRSEYVAQCLGRA---AQGGCPRARCRRALRRFF 72

Qy         87 ARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRP 146
              |||||||||||||| | |||||||||||| |:||||||  ||||||:||: ||||| |||
Db         73 ARGPPALTHALLFCPCAGPACAERRRQTFVPSCAFSGPGPAPPSCLEPLNFCERSRVCRP 132

Qy        147 RLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEAS 206
              || ||| || ||| : |||  : | |||||||||||| |||||:|||||||||||| | ||
Db        133 RLLAFQVSCTPAPSAPDGCLLDQGARCLRAYAGLVGTAVTPNYVDNVSARVAPWCDCGAS 192

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |||||:|||| |||| |||||||| |  | || || ||
Db        193 GNRREDCEAFRGLFTRNRCLDGAIQAFASGWPPVLLDQLNP 233


RESULT 11
AAB62105
ID   AAB62105 standard; protein; 282 AA.
XX
AC   AAB62105;
XX
DT   29-MAY-2001  (first entry)
XX
DE   Human RetL5 polypeptide.
XX
KW   Ret ligand 5; RetL5; autophosphorylation; tumour; renal; nephrotropic;
KW   Alzheimer's disease; Parkinson's disease; Huntington's disease; human;
KW   vulnerary; nootropic; anti-HIV; neuroprotective; antibacterial;
KW   cerebroprotective; hemostatic; antiinflammatory; antiviral; neuroleptic.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .20
FT                   /note= "siganl peptide"
FT   Protein         21. .282
FT                   /note= "mature protein"
XX
PN   WO200116169-A2.
XX
PD   08-MAR-2001.
XX
PF   01-SEP-2000; 2000WO-US024111.
XX
PR   01-SEP-1999;   99US-0152024P.
XX
PA   (BIOJ ) BIOGEN INC.
XX
PI   Worley D;
XX
DR   WPI; 2001-235091/24.
DR   N-PSDB; AAF57272.
XX
PT   Novel Ret ligand polypeptide useful for suppressing growth of a tumor
PT   cell that expresses Ret and for modulating Ret signal transduction
PT   involving a cell expressing Ret polypeptide or Ret ligand polypeptide.
XX
PS   Claim 13; Fig 6; 76pp; English.
XX
CC   The invention relates to mouse and human Ret ligand 5 (RetL5)
CC   polypeptides. The RetL5 polypeptides can be expressed by standard
CC   recombinant methodology. The RetL5 when bound to Ret, acts as a
CC   dimerization or autophosphorylation activator. The polypeptides and their
CC   antibodies are useful for stimulating growth of or limiting damage to,
CC   Ret expressing tissue in a subject, for suppressing growth of a tumour
CC   cell that expresses Ret, for modulating Ret signal transduction involving
CC   a cell expressing the Ret polypeptide. The RetL5 polypeptides, fusion
CC   proteins containing RetL5 and antibodies are useful for stimulating renal
CC   tissue growth and/or survival, supporting renal function and minimizing
CC   damage to renal tissue after various insults, particularly for treating
CC   acute renal failure, acute nephritis, chronic renal failure, nephrotic
CC   syndrome, renal tubule defects, kidney transplants, toxic injury, hypoxic
CC   injury and trauma. The compounds are also useful for treating conditions
CC   such as neural degeneration where neural growth and regeneration are
CC   desirable, e.g., Alzheimer's disease, Parkinson's disease, Huntington's
CC   disease, Tourette's syndrome, amyotrophic lateral sclerosis, as well as
CC   motor neuron disease, demyelinating disease, bacterial diseases, viral
CC   diseases, and prion diseases including Creutzfeldt-Jakob disease. The
CC   compounds are also useful for treating disorders due to damage to neural
CC   tissue caused by neoplastic impingement, trauma or cerebrovascular events
```

```
CC   such as hemorrhage or emboli, and neural disorders such as mental
CC   retardation, autism, fetal alcohol syndrome, Down's syndrome and cerebral
CC   palsy. The present sequence represents the human RetL5 polypeptide
XX
SQ   Sequence 282 AA;

  Query Match             64.7%;  Score 914.5;  DB 4;  Length 282;
  Best Local Similarity   74.6%;  Pred. No. 7.4e-77;
  Matches  173;  Conservative   15;  Mismatches   41;  Indels    3;  Gaps    1;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              |||||  |||||:|||||||| :||:||||||||||||     | | |:||||||||||
Db         16 GSASSVGGNRCVDAAEACTADARCQRLRSEYVAQCLGRA---AQGGCPRARCRRALRRFF 72

Qy         87 ARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRP 146
              |||||||||||||| | |||||||||||| |:||||||  ||||||:||: ||||| |||
Db         73 ARGPPALTHALLFCPCAGPACAERRRQTFVPSCAFSGPGPAPPSCLEPLNFCERSRVCRP 132

Qy        147 RLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEAS 206
              || ||| || ||| : |||  : | |||||||||||| |||||:|||||||||| | ||
Db        133 RLLAFQVSCTPAPSAPDGCLLDQGARCLRAYAGLVGTAVTPNYVDNVSARVAPWCDCGAS 192

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNPYQNAGQAKVEA 258
              |||||:||||| ||||| || |||||| |  | || || ||  :   : ::|
Db        193 GNRREDCEAFRGLFTRNRCLGGAIQAFASGWPPVLLDQLNPQGDPEHSLLQA 244


RESULT 12
ABB09218
ID   ABB09218 standard; protein; 299 AA.
XX
AC   ABB09218;
XX
DT   08-JUL-2002  (first entry)
XX
DE   Human putative GPI-anchored isoform b protein SEQ ID NO:5.
XX
KW   GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW   glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW   glial cell line derived neurotrophic factor; osteopathic; tumour;
KW   neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW   medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW   neuronal disorder; aberrant axonal sprouting.
XX
OS   Homo sapiens.
XX
PN   WO200162795-A1.
XX
PD   30-AUG-2001.
XX
PF   14-NOV-2000; 2000WO-FI000994.
XX
PR   21-FEB-2000; 2000FI-00000394.
XX
PA   (LICE-) LICENTIA LTD.
XX
PI   Airaksinen M,  Saarma M,  Poteriaev D,  Lindahl M,  Timmusk T;
PI   Rossi J;
XX
DR   WPI; 2001-596722/67.
DR   N-PSDB; ABL51673.
XX
PT   New nucleic acid sequence for manufacturing polypeptides for treating
PT   endocrine cancers comprises a cDNA encoding a splicing isoform of
PT   mammalian growth factor receptor (GFR)alpha4.
XX
PS   Claim 9; Fig 22B; 143pp; English.
XX
CC   The present invention describes an isolated and purified cDNA sequence
CC   encoding a splicing isoform of a mammalian growth factor receptor
CC   (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC   osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC   a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC   neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC   polynucleotide sequence can be used for recording GFRalpha4 mediated
CC   signalling in neurons or endocrine cells such as thyroid calcitonin-
CC   producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC   cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC   polynucleotide sequences can be are used for manufacturing polypeptides
CC   useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC   adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC   neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC   pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC   preventing neuronal death or aberrant axonal sprouting. The present
CC   sequence represents the human GFRalpha 4 protein, designated putative GPI
CC   -anchored isoform b, from the present invention
XX
SQ   Sequence 299 AA;

  Query Match             54.3%;  Score 767.5;  DB 4;  Length 299;
  Best Local Similarity   62.5%;  Pred. No. 4.1e-63;
  Matches  157;  Conservative   10;  Mismatches   51;  Indels   33;  Gaps    3;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              |||||  |||||:|||||||| :||:||||||||||||     | | |:||||||||||
Db         16 GSASSVGGNRCVDAAEACTADARCQRLRSEYVAQCLGRA---AQGGCPRARCRRALRRFF 72

Qy         87 ARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCR- 145
              |||||||||||||| | |||||||||||| |:||||||  ||||||:||: ||||| ||
Db         73 ARGPPALTHALLFCPCAGPACAERRRQTFVPSCAFSGPGPAPPSCLEPLNFCERSRVCRC 132

Qy        146 ----------------------------PRLFAFQASCAPAPGSRDGCPEEGGPRCLRAY 177
                                         | |  |  |  |  |  |  |  ||
Db        133 ARAAAGPWRGWGRGLSPAHRPPAAQASPPGLSGLVHPSAQRPRRLPAGPGRPLPARLRGP 192

Qy        178 AGL-VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQAFDSS 236
               |:  || |||||:|||||||||||| | |||||||:||||| ||||| |||||||||| |
Db        193 RGVPAGTAVTPNYVDNVSARVAPWCDCGASGNRREDCEAFRGLFTRNRCLDGAIQAFASG 252

Qy        237 QPSVLQDQWNP 247
              | || || ||
Db        253 WPPVLLDQLNP 263


RESULT 13
ABB09219
ID   ABB09219 standard; protein; 182 AA.
XX
AC   ABB09219;
XX
DT   08-JUL-2002  (first entry)
XX
DE   Human putative soluble isoform c protein SEQ ID NO:6.
XX
KW   GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW   glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW   glial cell line derived neurotrophic factor; osteopathic; tumour;
KW   neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW   medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW   neuronal disorder; aberrant axonal sprouting.
XX
OS   Homo sapiens.
XX
PN   WO200162795-A1.
XX
PD   30-AUG-2001.
XX
PF   14-NOV-2000; 2000WO-FI000994.
XX
PR   21-FEB-2000; 2000FI-00000394.
XX
PA   (LICE-) LICENTIA LTD.
XX
PI   Airaksinen M,  Saarma M,  Poteriaev D,  Lindahl M,  Timmusk T;
PI   Rossi J;
XX
```

```
DR   WPI; 2001-596722/67.
DR   N-PSDB; ABL51674.
XX
PT   New nucleic acid sequence for manufacturing polypeptides for treating
PT   endocrine cancers comprises a cDNA encoding a splicing isoform of
PT   mammalian growth factor receptor (GFR)alpha4.
XX
PS   Claim 9; Fig 23B; 143pp; English.
XX
CC   The present invention describes an isolated and purified cDNA sequence
CC   encoding a splicing isoform of a mammalian growth factor receptor
CC   (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC   osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC   a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC   neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC   polynucleotide sequence can be used for recording GFRalpha4 mediated
CC   signalling in neurons or endocrine cells such as thyroid calcitonin-
CC   producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC   cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC   polynucleotide sequences can be are used for manufacturing polypeptides
CC   useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC   adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC   neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC   pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC   preventing neuronal death or aberrant axonal sprouting. The present
CC   sequence represents the human GFRalpha 4 protein, designated putative
CC   soluble isoform c, from the present invention
XX
SQ   Sequence 182 AA;

  Query Match             46.0%;  Score 649.5;  DB 4;  Length 182;
  Best Local Similarity   75.8%;  Pred. No. 2.3e-52;
  Matches  122;  Conservative   10;  Mismatches   26;  Indels    3;  Gaps    1;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFF 86
              |||||  |||||:|||||||| :||:||||||||||||     | | |:||||||||||
Db         16 GSASSVGGNRCVDAAEACTADARCQRLRSEYVAQCLGRA---AQGGCPRARCRRALRRFF 72

Qy         87 ARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRP 146
              |||||||||||||| | |||||||||||| |:|||||  ||||||:||: ||||| |||
Db         73 ARGPPALTHALLFCPCAGPACAERRRQTFVPSCAFSGPGPAPPSCLEPLNFCERSRVCRP 132

Qy        147 RLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTP 187
              || ||| || ||| : |||  : | ||||||||||:   |
Db        133 RLLAFQVSCTPAPSAPDGCLLDQGARCLRAYAGLVGSPQAP 173


RESULT 14
ABB09216
ID   ABB09216 standard; protein; 190 AA.
XX
AC   ABB09216;
XX
DT   08-JUL-2002  (first entry)
XX
DE   Mouse secreted isoform a3/4 protein SEQ ID NO:3.
XX
KW   GFRalpha4; glycosyl-phosphatidylinositol; GPI; GDNF; cytostatic;
KW   glycosyl-phosphatidylinositol-linked GDNF family alpha-receptor;
KW   glial cell line derived neurotrophic factor; osteopathic; tumour;
KW   neuroprotective; anticonvulsant; neoplasia; endocrine tumour;
KW   medullary thyroid carcinoma; pheochromocytoma; parathyroid hyperplasia;
KW   neuronal disorder; aberrant axonal sprouting.
XX
OS   Mus musculus.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 85
FT                   /note= "encoded by CGC"
FT   Misc-difference 138
FT                   /note= "encoded by TGC"
FT   Misc-difference 139
FT                   /note= "encoded by GTG"
XX
PN   WO200162795-A1.
XX
PD   30-AUG-2001.
XX
PF   14-NOV-2000; 2000WO-FI000994.
XX
PR   21-FEB-2000; 2000FI-00000394.
XX
PA   (LICE-) LICENTIA LTD.
XX
PI   Airaksinen M,  Saarma M,  Poteriaev D,  Lindahl M,  Timmusk T;
PI   Rossi J;
XX
DR   WPI; 2001-596722/67.
DR   N-PSDB; ABL51671.
XX
PT   New nucleic acid sequence for manufacturing polypeptides for treating
PT   endocrine cancers comprises a cDNA encoding a splicing isoform of
PT   mammalian growth factor receptor (GFR)alpha4.
XX
PS   Claim 9; Fig 20B; 143pp; English.
XX
CC   The present invention describes an isolated and purified cDNA sequence
CC   encoding a splicing isoform of a mammalian growth factor receptor
CC   (GFR)alpha4, or its fragments. GFRalpha4 sequences have cytostatic,
CC   osteopathic, neuroprotective and anticonvulsant activities. GFRalpha4 is
CC   a glycosyl-phosphatidylinositol (GPI)-linked glial cell line-derived
CC   neurotrophic factor (GDNF) family alpha-receptor. A GFRalpha4
CC   polynucleotide sequence can be used for recording GFRalpha4 mediated
CC   signalling in neurons or endocrine cells such as thyroid calcitonin-
CC   producing C-cells, parathyroid gland cells, adrenal chromaffin cells, or
CC   cells from the pituitary intermediate lobe. GFRalpha4 protein and
CC   polynucleotide sequences can be are used for manufacturing polypeptides
CC   useful for diagnosing and/or treating tumours in parathyroid gland cells,
CC   adrenal chromaffin cells, cells of pituitary intermediate lobe,
CC   neoplasia, endocrine tumours, medullary thyroid carcinoma and
CC   pheochromocytoma, parathyroid hyperplasia, neuronal disorders or for
CC   preventing neuronal death or aberrant axonal sprouting. The present
CC   sequence represents the mouse GFRalpha 4 protein, designated secreted
CC   isoform a3/4, from the present invention
XX
SQ   Sequence 190 AA;

  Query Match             40.3%;  Score 569.5;  DB 4;  Length 190;
  Best Local Similarity   64.7%;  Pred. No. 7.1e-45;
  Matches  121;  Conservative    8;  Mismatches   33;  Indels   25;  Gaps    5;

Qy         27 GSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRA---GWRGPGSCVRSRCRRALR 83
              |||| |:|||||:|||||||||:||||||||||:|||||    |  ||| ||||||||||
Db         16 GSASFTDGNRCVDAAEACTADERCQQLRSEYVARCLGRAAPGGRPGPGGCVRSRCRRALR 75

Qy         84 RFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRR 143
              |||||||||||||||||||||| |||||||||||||||||| | ||||||:||:||||||
Db         76 RFFARGPPALTHALLFCGCEGSACAERRRQTFAPACAFSGPGLVPPSCLEPLERCERSRL 135

Qy        144 CRPRLFAFQASCAPAPGSRDGCPEEGGPRC-LRAYAGLVGTVVTPNYLDNVSARVAPWCG 202
              ||                | |     ||   :|| || |     |: |     | ||
Db        136 CRV--------------CRAG---RAGPLTRVRARAGPVSLPSRPHAL----PRPAPATA 174

Qy        203 CEASGNR 209
                | |
Db        175 ARRRGAR 181


RESULT 15
AAE05369
ID   AAE05369 standard; protein; 132 AA.
XX
AC   AAE05369;
XX
DT   12-SEP-2001  (first entry)
XX
```

DE Mouse Gdnf family receptor alpha 4 transmembrane isoform protein.
XX
KW Mouse; cytostatic; antiinflammatory; immunoregulatory; tissue integrity;
KW wound healing; immune response; vaccine; cancer; asthma; allergy;
KW Gdnf family receptor alpha 4 transmembrane isoform; cell trafficking;
KW therapy; Gfra4; secreted protein.
XX
OS Mus sp.
XX
PN WO200148192-A1.
XX
PD 05-JUL-2001.
XX
PF 21-DEC-2000; 2000WO-NZ000256.
XX
PR 23-DEC-1999; 99US-0171678P.
PR 28-NOV-2000; 2000US-00724864.
XX
PA (GENE-) GENESIS RES & DEV CORP LTD.
XX
PI Watson JD, Murison JG;
XX
DR WPI; 2001-425665/45.
DR N-PSDB; AAD10139.
XX
PT Novel isolated polypeptide useful to isolate corresponding interacting
PT proteins or other compounds, to quantitatively determine levels of
PT interacting proteins or other compounds, and as therapeutic target.
XX
PS Claim 6; Page 93; 101pp; English.
XX
CC The patent discloses novel polynucleotides and their corresponding
CC proteins which play a major role in induction of growth, cell migration
CC and proliferation, cell-cell interaction and the differentiation of
CC tissue-specific cells. These proteins are important in the maintenance of
CC tissue integrity and thus are important in wound healing. They are useful
CC in various assays to determine the biological activity, to raise
CC antibodies, to isolate corresponding interacting proteins or other
CC compounds, to quantitatively determine levels of interacting proteins or
CC other compounds, and as therapeutic target in a whole range of disease
CC states. Compositions comprising the novel proteins of the invention are
CC useful for treating mammalian disorders. Polynucleotides of the invention
CC are useful in genome and physical mapping, in positional cloning of
CC genes, to tag or identify an organism or its reproductive material (as
CC non-disruptive tags for marking organisms), and for the diagnosis and
CC treatment of mammalian diseases which is the consequence of inappropriate
CC expression of kinase genes. They are useful for promoting immune response
CC as part of a vaccine or anti-cancer treatment, as target for cancer
CC treatment, as immunoregulatory and anti-inflammatory molecule, as
CC diagnostic for specific types of cancer and for development of an anti-
CC cancer treatment, and as a target for antagonists in the treatment of
CC diseases such as asthma and allergy. They are also useful to inhibit or
CC enhance the activity of the soluble molecule that binds proteins of the
CC invention, for tissue and neural regeneration, to promote or block cell
CC trafficking, and as anti-inflammatory and/or vaccine adjuvant. The
CC present sequence is mouse Gdnf family receptor alpha 4 (Gfra4)
CC transmembrane isoform
XX
SQ Sequence 132 AA;

Query Match 36.4%; Score 515; DB 4; Length 132;
Best Local Similarity 94.0%; Pred. No. 5.6e-40;
Matches 94; Conservative 1; Mismatches 5; Indels 0; Gaps 0;

```
Qy      145 RPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCE 204
            |||| |||||||||||||| |||||||||| |||| :|||||||||||||||||||||||
Db        9 RPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGCA 68

Qy      205 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
            |||||||||||||||||||||||||||||| ||||||||
Db       69 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 108
```

Search completed: January 26, 2005, 13:12:23
Job time : 160 secs

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: January 26, 2005, 13:05:31 ; Search time 41 Seconds
(without alignments)
605.462 Million cell updates/sec

Title: US-10-019-337E-9
Perfect score: 1413
Sequence: 1 MLSGAYLRVLNERPGQAVLW.....SVLQDQWNPYQNAGQAKVEA 258

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR_79:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	364.5	25.8	397	2	JE0082	GPI-linked recepto
2	130.5	9.2	3635	2	T10053	laminin alpha 5 ch
3	124.5	8.8	1959	1	AGRT	agrin - rat
4	124	8.8	1574	2	T13954	MEGF6 protein - ra
5	123.5	8.7	1964	2	T09059	notch4 - mouse
6	122	8.6	4006	2	T09070	probable tenascin
7	118.5	8.4	1797	2	A55677	laminin beta-2 cha
8	116	8.2	384	2	S25771	gas1 protein - mou
9	116	8.2	2321	2	S78549	notch3 protein - h
10	114	8.1	686	2	JC7569	Delta-4 protein -
11	114	8.1	1220	2	A56136	jagged protein pre
12	113	8.0	572	2	T29880	hypothetical prote
13	112.5	8.0	1372	2	T25933	hypothetical prote
14	110.5	7.8	476	2	A36478	surface glycoprote
15	110	7.8	4135	2	T42629	tenascin-X - bovin
16	109.5	7.7	1798	2	S53869	laminin beta-2 cha
17	108.5	7.7	2318	2	S45306	notch 3 protein -
18	108	7.6	2918	2	A54105	fibrillin-2 precur
19	107.5	7.6	1203	2	A49175	Motch B protein -
20	107.5	7.6	1955	1	AGCH	agrin precursor -
21	107.5	7.6	2471	2	A49128	cell-fate determin
22	107	7.6	2531	2	A46019	notch-1 protein -
23	107	7.6	3566	1	A40701	tenascin-X precurs
24	106	7.5	335	2	T31560	hypothetical prote
25	105.5	7.5	1184	2	A55184	fibulin-2 precurso
26	105.5	7.5	1801	1	MMRTS	laminin beta-2 cha
27	105.5	7.5	2555	2	A40043	notch protein homo
28	104.5	7.4	242	2	T29699	hypothetical prote
29	104.5	7.4	335	2	T31561	hypothetical prote
30	104.5	7.4	3672	2	T23433	hypothetical prote
31	104.5	7.4	3704	2	T37316	probable laminin a
32	104	7.4	345	2	A53138	gas1 homolog - hum
33	103.5	7.3	335	2	T31559	hypothetical prote
34	103.5	7.3	425	2	T18592	hypothetical prote
35	103.5	7.3	2769	1	UIBO	thyroglobulin prec
36	103	7.3	2139	2	A35672	crumbs protein - f
37	102.5	7.3	600	2	T18593	hypothetical prote
38	102.5	7.3	1064	2	A40136	fibropellin Ia - s
39	102	7.2	2531	2	S18188	notch protein homo
40	101	7.1	2524	2	A35844	Xotch protein - Af
41	100	7.1	728	2	T20561	hypothetical prote
42	100	7.1	2907	2	A57278	fibrillin-2 precur
43	100	7.1	3075	2	S14458	laminin alpha-1 ch
44	99	7.0	1620	2	T27283	hypothetical prote
45	99	7.0	2352	2	T30201	Notch homolog prot

ALIGNMENTS

RESULT 1
JE0082
GPI-linked receptor precursor - mouse
N;Alternate names: GFRalpha-3
C;Species: Mus musculus (house mouse)
C;Date: 21-May-1998 #sequence_revision 29-May-1998 #text_change 09-Jul-2004
C;Accession: JE0082
R;Nomoto, S.; Ito, S.; Yang, L.X.; Kiuchi, K.
Biochem. Biophys. Res. Commun. 244, 849-853, 1998
A;Title: Molecular cloning and expression analysis of GFRalpha-3,a novel cDNA related to
A;Reference number: JE0082; MUID:98205811; PMID:9535755
A;Accession: JE0082
A;Molecule type: mRNA
A;Residues: 1-397 <NOM>
A;Cross-references: UNIPROT:O35118; DDBJ:AB008833; NID:g2627159; PIDN:BAA23562.1; PID:g2
C;Comment: This protein plays a distinct role in cell survival and differentiation.
C;Superfamily: Mus musculus GPI-linked receptor
C;Keywords: glycoprotein
F;1-25/Domain: signal sequence #status predicted <SIG>
F;380-397/Region: hydrophobic
F;92,145,306/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 25.8%; Score 364.5; DB 2; Length 397;
Best Local Similarity 35.1%; Pred. No. 8.4e-23;
Matches 86; Conservative 26; Mismatches 102; Indels 31; Gaps 7;

```
Qy          20 WSLGCQRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCR 79
               | :   : :    : : |:: |  ||  ::| :|| |   | |          | | |
Db         142 WKMNLSKLNMLKPDSDLCLKFAMLCTLHDKCDRLRKAYGEACSGI-------RCQRHLCL 194

Qy          80 RALRRFFARGPPALTHALLFCGC--EGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDR 137
                 || || :   :    || | |  |   | |||| | ||:||          |:||
Db         195 AQLRSFFEKAAESHAQGLLLCPCAPEDAGCGERRRNTIAPSCALPS---VTPNCLDLRSF 251

Qy         138 CERSRRCRPRLFAFQASCAPAP--GSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSA 195
               |      || ||  ||  | |     |:   |  |   |||||| ||:|| :|||::  |:
Db         252 CRADPLCRSRLMDFQTHCHPMDILGT---CATEQS-RCLRAYLGLIGTAMTPNFISKVNT 307

Qy         196 RVAPWCGCEASGNRREECEAFRKLFTRNPCLDGAIQA------------FDSSQPSVLQ 242
               ||  | |  ||| ::|||   : |::|||  || |              ||:   | |
Db         308 TVALSCTCRGSGNLQDECEQLERSFSQNPCLVEAIAAKMRFHRQLFSQDWADSTFSVVQQ 367

Qy         243 DQWNP 247
                 ||
Db         368 QNSNP 372
```

RESULT 2
T10053
laminin alpha 5 chain - mouse (fragment)
C;Species: Mus musculus (house mouse)
C;Date: 16-Jul-1999 #sequence_revision 16-Jul-1999 #text_change 09-Jul-2004

C;Accession: T10053
R;Miner, J.H.; Lewis, R.M.; Sanes, J.R.
submitted to the EMBL Data Library, November 1997
A;Reference number: Z16923
A;Accession: T10053
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-3635 <MIN>
A;Cross-references: UNIPROT:Q61001; EMBL:U37501; NID:g2599231; PID:g2599232
C;Genetics:
A;Gene: Lama5
C;Keywords: basement membrane; cell binding; extracellular matrix
F;1888-1939/Domain: laminin-type EGF-like homology <LEG>
F;1942-1970/Domain: EGF homology <EGF>

Query Match 9.2%; Score 130.5; DB 2; Length 3635;
Best Local Similarity 20.4%; Pred. No. 0.013;
Matches 65; Conservative 21; Mismatches 97; Indels 135; Gaps 12;

```
Qy         24 CQRGSASSTEG---------------NRCVEAAEAC------TADEQCQQLRSEYVA--- 59
Db       1763 CAPGYYRDTKGLFLGRCVPCQCHGHSDRCLPGSGICVGCQHNTEGDQCERCRPGFVSSDP 1822

Qy         60 --------------------------------QCLGRAGWRGPGSCVRSRCRRALRRFFA 87
Db       1823 SNPASPCVSCPCPLAVPSNNFADGCVLRNGRTQCLCRPGYAG------ASCERCAPGFFG 1876

Qy         88 RGPPALTHALLFCGCEG---------------PACAERRRQTFAPAC-----AFSGPQLA 127
Db       1877 -NPLVLGSSCQPCDCSGNGDPNMIFSDCDPLTGACRGCLRHTTGPHCERCAPGFYGNALL 1935

Qy        128 PPSCLK-------------PLDRC---------ERSRRCRPRLFAFQ-------ASCAPAP 159
Db       1936 PGNCTRCDCSPCGTETCDPQSGRCLCKAGVTGQRCDRCLEGYFGFEQCQGCRPCACGPAA 1995

Qy        160 GSRDGCPEEG---------GPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRR 210
Db       1996 KGSECHPQSGQCHCQPGTTGPQCLECAPGYWG---------------LPEKGCRRCQCPR 2040

Qy        211 EECEAFRKLFTRNPCLDG 228
Db       2041 GHCDPHTGHCTCPPGLSG 2058
```

RESULT 3
AGRT
agrin - rat
C;Species: Rattus norvegicus (Norway rat)
C;Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 09-Jul-2004
C;Accession: JH0399; A38856
R;Rupp, F.; Payan, D.G.; Magill-Solc, C.; Cowan, D.M.; Scheller, R.H.
Neuron 6, 811-823, 1991
A;Title: Structure and expression of a rat agrin.
A;Reference number: JH0399; MUID:91222570; PMID:1851019
A;Accession: JH0399
A;Molecule type: mRNA
A;Residues: 1-1779;1799-1959 <RUP>
A;Cross-references: UNIPROT:P25304; GB:M64780; NID:g202798; PIDN:AAA40703.1; PID:g202800
A;Experimental source: embryonic spinal cord
A;Note: it is uncertain whether Met-1, Met-18, or Met-24 is the initiator
R;Rupp, F.; Oezcelik, T.; Linial, M.; Peterson, K.; Francke, U.; Scheller, R.
J. Neurosci. 12, 3535-3544, 1992
A;Title: Structure and chromosomal localization of the mammalian agrin gene.
A;Reference number: A38856; MUID:92407628; PMID:1326608
A;Accession: A38856
A;Molecule type: mRNA
A;Residues: 1780-1798 <RU2>
A;Cross-references: GB:S44194
C;Comment: This protein mediates the motor neuron-induced aggregation of acetylcholine r
C;Comment: 90% of rat embryonic transcripts encode the variant labeled below as form 3.
ylcholine receptor clustering activity.
C;Superfamily: agrin; EGF homology; Kazal proteinase inhibitor homology; laminin G repea
C;Keywords: alternative splicing; duplication; glycoprotein; neuromuscular junction
F;1-1959/Product: agrin, form 1 #status predicted <AG1>
F;1-1787,1799-1959/Product: agrin, form 4 #status predicted <AG4>
F;1-1779,1799-1959/Product: agrin, form 3 #status predicted <AG3>
F;1-1779,1788-1959/Product: agrin, form 5 #status predicted <AG5>
F;1-1143,1153-1959/Product: agrin, form 2 #status predicted <AG2>
F;22-50/Region: hydrophobic
F;88-137/Domain: Kazal proteinase inhibitor homology <KPI1>
F;163-212/Domain: Kazal proteinase inhibitor homology <KPI2>
F;236-284/Domain: Kazal proteinase inhibitor homology <KPI3>
F;307-356/Domain: Kazal proteinase inhibitor homology <KPI4>
F;381-429/Domain: Kazal proteinase inhibitor homology <KPI5>
F;446-494/Domain: Kazal proteinase inhibitor homology <KPI6>
F;511-559/Domain: Kazal proteinase inhibitor homology <KPI7>
F;540-542/Region: motor neuron attachment (L-R-E) motif
F;596-645/Domain: Kazal proteinase inhibitor homology <KPI8>
F;688-739/Domain: laminin-type EGF-like homology <LE1>
F;742-786/Domain: laminin-type EGF-like homology <LE2>
F;814-864/Domain: Kazal proteinase inhibitor homology <KPI9>
F;869-992/Region: serine/threonine-rich
F;1084-1086/Region: motor neuron attachment (L-R-E) motif
F;1147-1215/Region: serine/threonine-rich
F;1224-1257/Domain: EGF homology <EG1>
F;1287-1442/Domain: laminin G repeat homology <LG1>
F;1444-1476/Domain: EGF homology <EG2>
F;1483-1515/Domain: EGF homology <EG3>
F;1555-1706/Domain: laminin G repeat homology <LG2>
F;1713-1747/Domain: EGF homology <EG4>
F;1807-1959/Domain: laminin G repeat homology <LG3>
F;97-116,105-137,171-191,180-212,244-263,252-284,316-335,324-356,389-408,397-429,454-473
-1476,1483-1494,1488-1504,1506-1515/Disulfide bonds: #status predicted
F;145,672,827,957/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 8.8%; Score 124.5; DB 1; Length 1959;
Best Local Similarity 23.0%; Pred. No. 0.024;
Matches 56; Conservative 25; Mismatches 111; Indels 51; Gaps 11;

```
Qy         25 QRGSASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAG-W---RGPGSCVRSRCRR 80
Db       552 EEAHAGPCEPAECGSGGSGSGEDDECEQ------ELCRQRGGIWDEDSEDGPCVCDFSCQ 605

Qy         81 ALRRFFARGPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAP------PSCLKP 134
Db       606 SVPRSPVCGSDGVTYG-TECDLKKARCESQQELYVAAQGACRGPTLAPLLPVAFPHCAQT 664

Qy        135 ----------------LDRCERSRRCRPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYA 178
Db       665 PYGCCQDNFTAAQGVGLAGCPSTCHCNPH-GSYSGTCDPATGQCSCRPGVGGLRCDRCEP 723

Qy        179 GL--VGTVVTPNYLDNVSARVAPWCGCEASGNRREECEAFRKLFTRNP---------CLD 227
Db       724 GFWNFRGIVTDGH-----SGCTP-CSCDPRGAVRDDCEQMTGLCSCRPGVAGPKCGQCPD 777

Qy        228 GAI 230
Db       778 GQV 780
```

RESULT 4
T13954
MEGF6 protein - rat
C;Species: Rattus norvegicus (Norway rat)
C;Date: 20-Sep-1999 #sequence_revision 20-Sep-1999 #text_change 09-Jul-2004
C;Accession: T13954
R;Nakayama, M.; Nakajima, D.; Nagase, T.; Nomura, N.; Seki, N.; Ohara, O.
Genomics 51, 27-34, 1998
A;Title: Identification of high-molecular-weight proteins with multiple EGF-like motifs
A;Reference number: Z14126; MUID:98360089; PMID:9693030
A;Accession: T13954
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-1574 <NAK>
A;Cross-references: UNIPROT:O88281; EMBL:AB011532; NID:g3449293; PIDN:BAA32462.1; PID:g3
A;Experimental source: strain Sprague-Dawley; brain

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: January 26, 2005, 13:15:47 ; Search time 147 Seconds
(without alignments)
634.100 Million cell updates/sec

Title: US-10-019-337E-9
Perfect score: 1413
Sequence: 1 MLSGAYLRVLNERPGQAVLW.....SVLQDQWNPYQNAGQAKVEA 258

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1608061 seqs, 361289386 residues

Total number of hits satisfying chosen parameters: 1608061

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published_Applications_AA:*
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep:*
2: /cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep:*
3: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
4: /cgn2_6/ptodata/1/pubpaa/US06_PUBCOMB.pep:*
5: /cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep:*
6: /cgn2_6/ptodata/1/pubpaa/PCTUS_PUBCOMB.pep:*
7: /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep:*
8: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
9: /cgn2_6/ptodata/1/pubpaa/US09A_PUBCOMB.pep:*
10: /cgn2_6/ptodata/1/pubpaa/US09B_PUBCOMB.pep:*
11: /cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*
12: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep:*
13: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep:*
14: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
15: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*
16: /cgn2_6/ptodata/1/pubpaa/US10D_PUBCOMB.pep:*
17: /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB.pep:*
18: /cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB.pep:*
19: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB.pep:*
20: /cgn2_6/ptodata/1/pubpaa/US60_PUBCOMB.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	515	36.4	132	10	US-09-866-050A-709	Sequence 709, App
2	469	33.2	445	16	US-10-673-007-11	Sequence 11, Appl
3	469	33.2	460	17	US-10-872-161-40	Sequence 40, Appl
4	469	33.2	464	9	US-09-388-316-6	Sequence 6, Appli
5	469	33.2	464	14	US-10-357-822-6	Sequence 6, Appli
6	469	33.2	464	16	US-10-673-007-2	Sequence 2, Appli
7	469	33.2	664	9	US-09-388-316-18	Sequence 18, Appl
8	469	33.2	664	14	US-10-357-822-18	Sequence 18, Appl
9	465	32.9	460	14	US-10-241-220-62	Sequence 62, Appl
10	465	32.9	460	17	US-10-872-972-62	Sequence 62, Appl
11	465	32.9	460	17	US-10-872-991-62	Sequence 62, Appl
12	465	32.9	463	14	US-10-155-693-10	Sequence 10, Appl
13	465	32.9	463	14	US-10-155-693-12	Sequence 12, Appl
14	465	32.9	463	17	US-10-872-161-10	Sequence 10, Appl
15	465	32.9	463	17	US-10-872-161-12	Sequence 12, Appl
16	465	32.9	465	14	US-10-357-822-22	Sequence 22, Appl
17	465	32.9	465	14	US-10-155-693-2	Sequence 2, Appli
18	465	32.9	465	14	US-10-155-693-6	Sequence 6, Appli
19	465	32.9	465	14	US-10-295-027-84	Sequence 84, Appl
20	465	32.9	465	15	US-10-058-270A-24	Sequence 24, Appl
21	465	32.9	465	16	US-10-673-007-8	Sequence 8, Appli
22	465	32.9	465	17	US-10-872-161-2	Sequence 2, Appli
23	465	32.9	465	17	US-10-872-161-6	Sequence 6, Appli
24	463	32.8	468	17	US-10-872-161-56	Sequence 56, Appl
25	462	32.7	464	9	US-09-388-316-3	Sequence 3, Appli
26	462	32.7	464	14	US-10-357-822-3	Sequence 3, Appli
27	462	32.7	464	16	US-10-673-007-9	Sequence 9, Appli
28	462	32.7	464	17	US-10-723-860-3950	Sequence 3950, Ap
29	462	32.7	468	14	US-10-033-350-2	Sequence 2, Appli
30	462	32.7	468	14	US-10-357-822-21	Sequence 21, Appl
31	462	32.7	468	14	US-10-155-693-4	Sequence 4, Appli
32	462	32.7	468	16	US-10-673-007-1	Sequence 1, Appli
33	462	32.7	468	17	US-10-872-161-4	Sequence 4, Appli
34	462	32.7	664	9	US-09-388-316-16	Sequence 16, Appl
35	462	32.7	664	14	US-10-357-822-16	Sequence 16, Appl
36	461	32.6	464	17	US-10-872-161-36	Sequence 36, Appl
37	432.5	30.6	489	17	US-10-872-161-44	Sequence 44, Appl
38	422	29.9	498	17	US-10-872-161-43	Sequence 43, Appl
39	399	28.2	232	14	US-10-155-693-14	Sequence 14, Appl
40	399	28.2	232	17	US-10-872-161-14	Sequence 14, Appl
41	399	28.2	294	14	US-10-155-693-16	Sequence 16, Appl
42	399	28.2	294	17	US-10-872-161-16	Sequence 16, Appl
43	376	26.6	397	17	US-10-872-161-42	Sequence 42, Appl
44	364.5	25.8	397	9	US-09-220-920-64	Sequence 64, Appl
45	361	25.5	400	9	US-09-220-920-63	Sequence 63, Appl

ALIGNMENTS

RESULT 1
US-09-866-050A-709
; Sequence 709, Application US/09866050A
; Publication No. US20030040471A1
; GENERAL INFORMATION:
; APPLICANT: Watson, James D.
; APPLICANT: Strachan, Lorna
; APPLICANT: Sleeman, Matthew
; APPLICANT: Onrust, Rene
; APPLICANT: Murison, James G.
; APPLICANT: Kumble, Krishanand D.
; TITLE OF INVENTION: Compositions Isolated From Skin Cells
; TITLE OF INVENTION: and Methods for Their Use
; FILE REFERENCE: 11000.1011c4U
; CURRENT APPLICATION NUMBER: US/09/866,050A
; CURRENT FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 725
; SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 709
; LENGTH: 132
; TYPE: PRT
; ORGANISM: Mouse
US-09-866-050A-709

Query Match 36.4%; Score 515; DB 10; Length 132;
Best Local Similarity 94.0%; Pred. No. 1e-36;
Matches 94; Conservative 1; Mismatches 5; Indels 0; Gaps 0;

```
Qy        145 RPRLFAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCE 204
              |||| |||||||||||||| |||||||||| ||||:|||||||||||||||||||||||
Db          9 RPRLLAFQASCAPAPGSRDRCPEEGGPRCLRVYAGLIGTVVTPNYLDNVSARVAPWCGCA 68

Qy        205 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQ 244
              |||||||||||||||||||||||||||||| ||||||||
Db         69 ASGNRREECEAFRKLFTRNPCLDGAIQAFDSLQPSVLQDQ 108
```

RESULT 2
US-10-673-007-11
; Sequence 11, Application US/10673007
; Publication No. US20040126819A1
; GENERAL INFORMATION:
; APPLICANT: Ibanez, Carlos F.
; APPLICANT: Arumae, Urmas
; APPLICANT: Sariola, Hannu
; APPLICANT: Suvanto, Petro
; APPLICANT: Trupp, Miles
; APPLICANT: Saarma, Mart
; TITLE OF INVENTION: Glial Cell Line-Derived Neurotropic Factor Receptors
; FILE REFERENCE: CEPH0418
; CURRENT APPLICATION NUMBER: US/10/673,007
; CURRENT FILING DATE: 2003-09-26
; PRIOR APPLICATION NUMBER: US/08/861,990
; PRIOR FILING DATE: 1997-05-22
; PRIOR APPLICATION NUMBER: 08/747,842
; PRIOR FILING DATE: 1996-11-13
; PRIOR APPLICATION NUMBER: 60/006,619
; PRIOR FILING DATE: 1995-11-13
; PRIOR APPLICATION NUMBER: 60/015,767
; PRIOR FILING DATE: 1996-04-16
; PRIOR APPLICATION NUMBER: 60/021,965
; PRIOR FILING DATE: 1996-06-27
; PRIOR APPLICATION NUMBER: 60/020,638
; PRIOR FILING DATE: 1996-06-27
; PRIOR APPLICATION NUMBER: 60/020,639
; PRIOR FILING DATE: 1996-06-27
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 11
; LENGTH: 445
; TYPE: PRT
; ORGANISM: Rattus sp.
US-10-673-007-11

Query Match 33.2%; Score 469; DB 16; Length 445;
Best Local Similarity 43.0%; Pred. No. 3.4e-32;
Matches 89; Conservative 33; Mismatches 79; Indels 6; Gaps 3;

```
Qy          29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
               | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db         153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy          89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
                 |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db         211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy         149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                 | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db         269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy         207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
               ||  |||| | : || ||||  |||||
Db         329 GNMEEECEKFLRDFTENPCLRNAIQAF 355
```

RESULT 3
US-10-872-161-40
; Sequence 40, Application US/10872161
; Publication No. US20040235714A1
; GENERAL INFORMATION:
; APPLICANT: FOX, GARY M.
; APPLICANT: JING, SHUQIAN
; APPLICANT: WEN, DUANZHI
; TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
; FILE REFERENCE: A-401D
; CURRENT APPLICATION NUMBER: US/10/872,161
; CURRENT FILING DATE: 2004-06-18
; PRIOR APPLICATION NUMBER: US/08/866,354
; PRIOR FILING DATE: 1997-05-30
; PRIOR APPLICATION NUMBER: US 60/015,907
; PRIOR FILING DATE: 1996-04-22
; PRIOR APPLICATION NUMBER: US 60/017,221
; PRIOR FILING DATE: 1996-05-09
; PRIOR APPLICATION NUMBER: US 08/837,199
; PRIOR FILING DATE: 1997-04-14
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PatentIn version 3.2
; SEQ ID NO 40
; LENGTH: 460
; TYPE: PRT
; ORGANISM: RAT
US-10-872-161-40

Query Match 33.2%; Score 469; DB 17; Length 460;
Best Local Similarity 43.0%; Pred. No. 3.5e-32;
Matches 89; Conservative 33; Mismatches 79; Indels 6; Gaps 3;

```
Qy          29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
               | ||: | |::||:||  :: |::||| |:: |          | | :| :|||:|| |
Db         149 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 206

Qy          89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
                 |   |: :||| |:  |||||||||  |:|::   :   |:||      |      || ||
Db         207 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 264

Qy         149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                 | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db         265 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 324

Qy         207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
               ||  |||| | : || ||||  |||||
Db         325 GNMEEECEKFLRDFTENPCLRNAIQAF 351
```

RESULT 4
US-09-388-316-6
; Sequence 6, Application US/09388316
; Publication No. US20020051972A1
; GENERAL INFORMATION:
; APPLICANT: Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
; TITLE OF INVENTION: Neurturin Receptor
; NUMBER OF SEQUENCES: 19
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Genentech, Inc.
; STREET: 1 DNA Way
; CITY: South San Francisco
; STATE: California
; COUNTRY: USA
; ZIP: 94080
; COMPUTER READABLE FORM:
; MEDIUM TYPE: 3.5 inch, 1.44 Mb floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: WinPatin (Genentech)
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/388,316
; FILING DATE: 01-Sep-1999
; CLASSIFICATION: <Unknown>
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 09/024,665
; FILING DATE: <Unknown>
; APPLICATION NUMBER: 60/049818
; FILING DATE: 9-Jun-1997
; APPLICATION NUMBER: 60/038839
; FILING DATE: 18-Feb-1997
; ATTORNEY/AGENT INFORMATION:
; NAME: Torchia, PhD., Timothy E.
; REGISTRATION NUMBER: 36,700
; REFERENCE/DOCKET NUMBER: P1086R3
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 650/225-8674
; TELEFAX: 650/952-9881

```
;   INFORMATION FOR SEQ ID NO: 6:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 464 amino acids
;             TYPE: Amino Acid
;             TOPOLOGY: Linear
;        SEQUENCE DESCRIPTION: SEQ ID NO: 6:
US-09-388-316-6

  Query Match             33.2%;  Score 469;  DB 9;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 3.5e-32;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 5
US-10-357-822-6
; Sequence 6, Application US/10357822
; Publication No. US20030110525A1
; GENERAL INFORMATION:
;  APPLICANT: KLEIN, ROBERT D.
;  APPLICANT:  ROSENTHAL, ARNON
;  APPLICANT:  HYNES, MARY A.
;  TITLE OF INVENTION: NEURTURIN RECEPTOR
;  FILE REFERENCE: GENENT.45A2DV1
;  CURRENT APPLICATION NUMBER: US/10/357,822
;  CURRENT FILING DATE:  2003-02-03
;  PRIOR APPLICATION NUMBER: US/09/388,316C
;  PRIOR FILING DATE: 1999-09-01
;  PRIOR APPLICATION NUMBER: 09/024,665
;  PRIOR FILING DATE: 1998-02-17
;  PRIOR APPLICATION NUMBER: 60/063,258
;  PRIOR FILING DATE: 1997-10-24
;  PRIOR APPLICATION NUMBER: 60/049,818
;  PRIOR FILING DATE: 1997-06-09
;  PRIOR APPLICATION NUMBER: 60/038,839
;  PRIOR FILING DATE: 1997-02-18
;  NUMBER OF SEQ ID NOS: 30
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 6
;   LENGTH: 464
;   TYPE: PRT
;   ORGANISM: Ratticus norveticus
US-10-357-822-6

  Query Match             33.2%;  Score 469;  DB 14;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 3.5e-32;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 6
US-10-673-007-2
; Sequence 2, Application US/10673007
; Publication No. US20040126819A1
; GENERAL INFORMATION:
;  APPLICANT: Ibanez, Carlos F.
;  APPLICANT:  Arumae, Urmas
;  APPLICANT:  Sariola, Hannu
;  APPLICANT:  Suvanto, Petro
;  APPLICANT:  Trupp, Miles
;  APPLICANT:  Saarma, Mart
;  TITLE OF INVENTION: Glial Cell Line-Derived Neurotropic Factor Receptors
;  FILE REFERENCE: CEPH0418
;  CURRENT APPLICATION NUMBER: US/10/673,007
;  CURRENT FILING DATE:  2003-09-26
;  PRIOR APPLICATION NUMBER: US/08/861,990
;  PRIOR FILING DATE: 1997-05-22
;  PRIOR APPLICATION NUMBER: 08/747,842
;  PRIOR FILING DATE: 1996-11-13
;  PRIOR APPLICATION NUMBER: 60/006,619
;  PRIOR FILING DATE: 1995-11-13
;  PRIOR APPLICATION NUMBER: 60/015,767
;  PRIOR FILING DATE: 1996-04-16
;  PRIOR APPLICATION NUMBER: 60/021,965
;  PRIOR FILING DATE: 1996-06-27
;  PRIOR APPLICATION NUMBER: 60/020,638
;  PRIOR FILING DATE: 1996-06-27
;  PRIOR APPLICATION NUMBER: 60/020,639
;  PRIOR FILING DATE: 1996-06-27
;  NUMBER OF SEQ ID NOS: 11
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 464
;   TYPE: PRT
;   ORGANISM: Rattus sp.
US-10-673-007-2

  Query Match             33.2%;  Score 469;  DB 16;  Length 464;
  Best Local Similarity   43.0%;  Pred. No. 3.5e-32;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||     |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :    || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 7
US-09-388-316-18
; Sequence 18, Application US/09388316
; Publication No. US20020051972A1
;   GENERAL INFORMATION:
;        APPLICANT: Robert D. Klein, Arnon Rosenthal, Mary A. Hynes
;        TITLE OF INVENTION: Neurturin Receptor
;        NUMBER OF SEQUENCES: 19
```

```
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Genentech, Inc.
;            STREET: 1 DNA Way
;            CITY: South San Francisco
;            STATE: California
;            COUNTRY: USA
;            ZIP: 94080
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: 3.5 inch, 1.44 Mb floppy disk
;            COMPUTER: IBM PC compatible
;            OPERATING SYSTEM: PC-DOS/MS-DOS
;            SOFTWARE: WinPatin (Genentech)
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/388,316
;            FILING DATE: 01-Sep-1999
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/024,665
;            FILING DATE: <Unknown>
;            APPLICATION NUMBER: 60/049818
;            FILING DATE: 9-Jun-1997
;            APPLICATION NUMBER: 60/038839
;            FILING DATE: 18-Feb-1997
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Torchia, PhD., Timothy E.
;            REGISTRATION NUMBER: 36,700
;            REFERENCE/DOCKET NUMBER: P1086R3
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650/225-8674
;            TELEFAX: 650/952-9881
;   INFORMATION FOR SEQ ID NO: 18:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 664 amino acids
;            TYPE: Amino Acid
;            TOPOLOGY: Linear
;       SEQUENCE DESCRIPTION: SEQ ID NO: 18:
US-09-388-316-18

  Query Match             33.2%;  Score 469;  DB 9;  Length 664;
  Best Local Similarity   43.0%;  Pred. No. 5.2e-32;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||      |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :   || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 8
US-10-357-822-18
; Sequence 18, Application US/10357822
; Publication No. US20030110525A1
; GENERAL INFORMATION:
;  APPLICANT: KLEIN, ROBERT D.
;  APPLICANT:  ROSENTHAL, ARNON
;  APPLICANT:  HYNES, MARY A.
;  TITLE OF INVENTION: NEURTURIN RECEPTOR
;  FILE REFERENCE: GENENT.45A2DV1
;  CURRENT APPLICATION NUMBER: US/10/357,822
;  CURRENT FILING DATE:  2003-02-03
;  PRIOR APPLICATION NUMBER: US/09/388,316C
;  PRIOR FILING DATE: 1999-09-01
;  PRIOR APPLICATION NUMBER: 09/024,665
;  PRIOR FILING DATE: 1998-02-17
;  PRIOR APPLICATION NUMBER: 60/063,258
;  PRIOR FILING DATE: 1997-10-24
;  PRIOR APPLICATION NUMBER: 60/049,818
;  PRIOR FILING DATE: 1997-06-09
;  PRIOR APPLICATION NUMBER: 60/038,839
;  PRIOR FILING DATE: 1997-02-18
;  NUMBER OF SEQ ID NOS: 30
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 18
;   LENGTH: 664
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: This sequence is a fusion protein comprising rat
;   OTHER INFORMATION: NTNRalpha sequence and human Fc sequence.
US-10-357-822-18

  Query Match             33.2%;  Score 469;  DB 14;  Length 664;
  Best Local Similarity   43.0%;  Pred. No. 5.2e-32;
  Matches   89;  Conservative   33;  Mismatches   79;  Indels    6;  Gaps    3;

Qy         29 ASSTEGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFAR 88
              | ||: | |::||:||  :: |::||| |:: |           | | :| :|||:|| |
Db        153 AVSTKSNHCLDAAKACNLNDNCKKLRSSYISICNREIS--PTERCNRRKCHKALRQFFDR 210

Qy         89 GPPALTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRL 148
               |   |: :||| |:  |||||||||  |:|::   :   |:||      |     || ||
Db        211 VPSEYTYRMLFCSCQDQACAERRRQTILPSCSYEDKE--KPNCLDLRSLCRTDHLCRSRL 268

Qy        149 FAFQASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDN--VSARVAPWCGCEAS 206
                | |:|  :  :   || :   || :|||::|  :||||:|:      |:||| |  |
Db        269 ADFHANCRASYRTITSCPADNYQACLGSYAGMIGFDMTPNYVDSNPTGIVVSPWCNCRGS 328

Qy        207 GNRREECEAFRKLFTRNPCLDGAIQAF 233
              ||  |||| | : || ||||  |||||
Db        329 GNMEEECEKFLRDFTENPCLRNAIQAF 355


RESULT 9
US-10-241-220-62
; Sequence 62, Application US/10241220
; Publication No. US20030148408A1
; GENERAL INFORMATION:
;  APPLICANT: Frantz,Gretchen
;  APPLICANT:  Hillan,Kenneth J.
;  APPLICANT:  Phillips,Heidi
;  APPLICANT:  Polakis,Paul
;  APPLICANT:  Spencer,Susan
;  APPLICANT:  Williams,P.Mickey
;  APPLICANT:  Wu,Thomas
;  APPLICANT:  Zhang,Zemin
;  TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE DIAGNOSIS AND
;  TITLE OF INVENTION:  TREATMENT OF TUMOR
;  FILE REFERENCE: P5010R1-US
;  CURRENT APPLICATION NUMBER: US/10/241,220
;  CURRENT FILING DATE:  2002-12-13
;  NUMBER OF SEQ ID NOS: 120
; SEQ ID NO 62
;   LENGTH: 460
;   TYPE: PRT
;   ORGANISM: Homo Sapien
US-10-241-220-62

  Query Match             32.9%;  Score 465;  DB 14;  Length 460;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db        145 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 201
```

```
Qy          93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db         202 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 259

Qy         153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
               :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db         260 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 319

Qy         213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
               |  |   |  | ||  ||||| :     :   | |
Db         320 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 351


RESULT 10
US-10-872-972-62
; Sequence 62, Application US/10872972
; Publication No. US20040229277A1
; GENERAL INFORMATION:
;  APPLICANT: Frantz,Gretchen
;  APPLICANT:  Hillan,Kenneth J.
;  APPLICANT:  Phillips,Heidi
;  APPLICANT:  Polakis,Paul
;  APPLICANT:  Spencer,Susan
;  APPLICANT:  Williams,P.Mickey
;  APPLICANT:  Wu,Thomas
;  APPLICANT:  Zhang,Zemin
;  TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE DIAGNOSIS AND
;  TITLE OF INVENTION:  TREATMENT OF TUMOR
;  FILE REFERENCE: P5010R1-US
;  CURRENT APPLICATION NUMBER: US/10/872,972
;  CURRENT FILING DATE:  2004-06-21
;  PRIOR APPLICATION NUMBER: US/10/241,220
;  PRIOR FILING DATE: 2002-09-11
;  NUMBER OF SEQ ID NOS: 120
; SEQ ID NO 62
;   LENGTH: 460
;   TYPE: PRT
;   ORGANISM: Homo Sapien
US-10-872-972-62

  Query Match            32.9%;  Score 465;  DB 17;  Length 460;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy          33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
               :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db         145 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 201

Qy          93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db         202 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 259

Qy         153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
               :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db         260 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 319

Qy         213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
               |  |   |  | ||  ||||| :     :   | |
Db         320 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 351


RESULT 11
US-10-872-991-62
; Sequence 62, Application US/10872991
; Publication No. US20040242860A1
; GENERAL INFORMATION:
;  APPLICANT: Frantz,Gretchen
;  APPLICANT:  Hillan,Kenneth J.
;  APPLICANT:  Phillips,Heidi
;  APPLICANT:  Polakis,Paul
;  APPLICANT:  Spencer,Susan
;  APPLICANT:  Williams,P.Mickey
;  APPLICANT:  Wu,Thomas
;  APPLICANT:  Zhang,Zemin
;  TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE DIAGNOSIS AND
;  TITLE OF INVENTION:  TREATMENT OF TUMOR
;  FILE REFERENCE: P5010R1-US
;  CURRENT APPLICATION NUMBER: US/10/872,991
;  CURRENT FILING DATE:  2004-06-21
;  PRIOR APPLICATION NUMBER: US/10/241,220
;  PRIOR FILING DATE: 2002-09-11
;  NUMBER OF SEQ ID NOS: 120
; SEQ ID NO 62
;   LENGTH: 460
;   TYPE: PRT
;   ORGANISM: Homo Sapien
US-10-872-991-62

  Query Match            32.9%;  Score 465;  DB 17;  Length 460;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy          33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
               :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db         145 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 201

Qy          93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db         202 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 259

Qy         153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
               :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db         260 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 319

Qy         213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
               |  |   |  | ||  ||||| :     :   | |
Db         320 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 351


RESULT 12
US-10-155-693-10
; Sequence 10, Application US/10155693
; Publication No. US20030175876A1
; GENERAL INFORMATION:
;  APPLICANT: FOX, GARY M.
;  APPLICANT:  JING, SHUQIAN
;  APPLICANT:  WEN, DUANZHI
;  TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
;  FILE REFERENCE: A-401C
;  CURRENT APPLICATION NUMBER: US/10/155,693
;  CURRENT FILING DATE:  2002-05-24
;  PRIOR APPLICATION NUMBER: US/08/837,199
;  PRIOR FILING DATE: 1997-04-14
;  PRIOR APPLICATION NUMBER: US 60/015,907
;  PRIOR FILING DATE: 1996-04-22
;  PRIOR APPLICATION NUMBER: US 60/017,221
;  PRIOR FILING DATE: 1996-05-09
;  NUMBER OF SEQ ID NOS: 47
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 10
;   LENGTH: 463
;   TYPE: PRT
;   ORGANISM: HUMAN
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (5)..(5)
;   OTHER INFORMATION: The 'Xaa' at location 5 stands for Thr, Ala, Pro, or Ser.
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (1)..(537)
;   OTHER INFORMATION: No. US20030175876A1e= "1 to 537 is -235 to 301 of Figure 5 21acon
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (550)..(550)
;   OTHER INFORMATION: N in position 550 indicates any nucleic acid
US-10-155-693-10
```

```
  Query Match             32.9%;  Score 465;  DB 14;  Length 463;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           |.| :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
              :: :||| |   || |||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |  |  | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :    :   | |
Db        325 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


RESULT 13
US-10-155-693-12
; Sequence 12, Application US/10155693
; Publication No. US20030175876A1
; GENERAL INFORMATION:
;  APPLICANT: FOX, GARY M.
;  APPLICANT:  JING, SHUQIAN
;  APPLICANT:  WEN, DUANZHI
;  TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
;  FILE REFERENCE: A-401C
;  CURRENT APPLICATION NUMBER: US/10/155,693
;  CURRENT FILING DATE:  2002-05-24
;  PRIOR APPLICATION NUMBER: US/08/837,199
;  PRIOR FILING DATE: 1997-04-14
;  PRIOR APPLICATION NUMBER: US 60/015,907
;  PRIOR FILING DATE: 1996-04-22
;  PRIOR APPLICATION NUMBER: US 60/017,221
;  PRIOR FILING DATE: 1996-05-09
;  NUMBER OF SEQ ID NOS: 47
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 12
;   LENGTH: 463
;   TYPE: PRT
;   ORGANISM: HUMAN
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (1)..(539)
;   OTHER INFORMATION: No. US20030175876A1e= "1 to 539 is -237 to 301 of Figure 5 21bcon
US-10-155-693-12

  Query Match             32.9%;  Score 465;  DB 14;  Length 463;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           |.| :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
              :: :||| |   || |||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |  |  | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :    :   | |
Db        325 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


RESULT 14
US-10-872-161-10
; Sequence 10, Application US/10872161
; Publication No. US20040235714A1
; GENERAL INFORMATION:
;  APPLICANT: FOX, GARY M.
;  APPLICANT:  JING, SHUQIAN
;  APPLICANT:  WEN, DUANZHI
;  TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
;  FILE REFERENCE: A-401D
;  CURRENT APPLICATION NUMBER: US/10/872,161
;  CURRENT FILING DATE:  2004-06-18
;  PRIOR APPLICATION NUMBER: US/08/866,354
;  PRIOR FILING DATE: 1997-05-30
;  PRIOR APPLICATION NUMBER: US 60/015,907
;  PRIOR FILING DATE: 1996-04-22
;  PRIOR APPLICATION NUMBER: US 60/017,221
;  PRIOR FILING DATE: 1996-05-09
;  PRIOR APPLICATION NUMBER: US 08/837,199
;  PRIOR FILING DATE: 1997-04-14
;  NUMBER OF SEQ ID NOS: 61
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 10
;   LENGTH: 463
;   TYPE: PRT
;   ORGANISM: HUMAN
;   FEATURE:
;   NAME/KEY: misc_feature
;   LOCATION: (5)..(5)
;   OTHER INFORMATION: The 'Xaa' at location 5 stands for Thr, Ala, Pro, or Ser.
US-10-872-161-10

  Query Match             32.9%;  Score 465;  DB 17;  Length 463;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           |.| :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
              :: :||| |   || |||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |  |  | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :    :   | |
Db        325 CLKFLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


RESULT 15
US-10-872-161-12
; Sequence 12, Application US/10872161
; Publication No. US20040235714A1
; GENERAL INFORMATION:
;  APPLICANT: FOX, GARY M.
;  APPLICANT:  JING, SHUQIAN
;  APPLICANT:  WEN, DUANZHI
;  TITLE OF INVENTION: GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR RECEPTOR
;  FILE REFERENCE: A-401D
;  CURRENT APPLICATION NUMBER: US/10/872,161
;  CURRENT FILING DATE:  2004-06-18
;  PRIOR APPLICATION NUMBER: US/08/866,354
;  PRIOR FILING DATE: 1997-05-30
;  PRIOR APPLICATION NUMBER: US 60/015,907
;  PRIOR FILING DATE: 1996-04-22
;  PRIOR APPLICATION NUMBER: US 60/017,221
;  PRIOR FILING DATE: 1996-05-09
;  PRIOR APPLICATION NUMBER: US 08/837,199
;  PRIOR FILING DATE: 1997-04-14
```

```
;  NUMBER OF SEQ ID NOS: 61
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 12
;   LENGTH: 463
;   TYPE: PRT
;   ORGANISM: HUMAN
US-10-872-161-12

  Query Match             32.9%;  Score 465;  DB 17;  Length 463;
  Best Local Similarity   41.9%;  Pred. No. 7.8e-32;
  Matches   90;  Conservative   30;  Mismatches   87;  Indels    8;  Gaps    3;

Qy         33 EGNRCVEAAEACTADEQCQQLRSEYVAQCLGRAGWRGPGSCVRSRCRRALRRFFARGPPA 92
              :|| |::||:||  |: |:: || |:  |           | | :| :|||:|| : |
Db        150 KGNNCLDAAKACNLDDICKKYRSAYITPCTTSV---SNDVCNRRKCHKALRQFFDKVPAK 206

Qy         93 LTHALLFCGCEGPACAERRRQTFAPACAFSGPQLAPPSCLKPLDRCERSRRCRPRLFAFQ 152
               :: :||| |   || ||||||  | |::   :   |:||   | |: :  || ||  |
Db        207 HSYGMLFCSCRDIACTERRRQTIVPVCSYE--EREKPNCLNLQDSCKTNYICRSRLADFF 264

Qy        153 ASCAPAPGSRDGCPEEGGPRCLRAYAGLVGTVVTPNYLDNVSARVAPWCGCEASGNRREE 212
              :| |   |   | :|    || ||:||:|||:||||:|: |  ||||| |  |||  ||
Db        265 TNCQPESRSVSSCLKENYADCLLAYSGLIGTVMTPNYIDSSSLSVAPWCDCSNSGNDLEE 324

Qy        213 CEAFRKLFTRNPCLDGAIQAFDSSQPSVLQDQWNP 247
              |  |   |  | ||  ||||| :     :   | |
Db        325 CLKPLNFFKDNTCLKNAIQAFGNGSDVTV---WQP 356


Search completed: January 26, 2005, 13:28:26
Job time : 149 secs
```